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Original Communications.

*CLINICAL LECTURE ON PAINLESS ENLARGEMENTS OF THE LIVER IN CHILDHOOD.**

BY LOUIS STARR, M.D.

GENTLEMEN:—Murchison, in his work on hepatic diseases, very aptly divides the affections of the liver attended by an increase in size into two classes,—the painless and the painful. It is my intention in this lecture to call your attention to the first class, which is the more common in children, and which embraces amyloid degeneration and fatty infiltration of the liver. First let us study:

1. *Fatty Infiltration of the Liver.*—"Fatty liver" is a condition in which the enlargement is due to an accumulation of oil in the hepatic cells. A liver so diseased is increased in all its dimensions, its surface is yellowish and oily, its margins rounded, and its texture doughy. On section, the cut surface is distinctly yellow, mottled with brownish-red spots, and, if a bit be put under the microscope, abundant granules and globules of fat can be seen.

The little negro boy before you is about 3 years old, and has been a patient in the Children's Hospital for the past three months.

* Reported by Dr. Wm. J. Taylor, Physician to Children's Dispensary, Hospital of the University of Pennsylvania.

During this time he has suffered with severe cough; has had a temperature which, as you see by the chart, has oscillated markedly, ranging from 99° or 100° F. in the morning to 104° or 105° F. in the evening, and has lost strength and flesh rapidly. No previous history of value can be obtained, for his mother, who is a prostitute, left him to the tender mercies of chance friends, and knows little or nothing about him. He comes before you now, presenting a miserable spectacle. His face is pinched, and shows the imprint of severe illness. The lips are cracked and ulcerated, marking great impairment of nutrition, a fact still further manifested by the wasted thorax and limbs. From the latter all the flesh seems to have disappeared, and the investing skin hangs about the bones in loose inelastic folds. The abdomen alone appears to be unaffected by the general wasting, and by its prominence stands in marked contrast to the emaciated frame.

The general symptoms may be stated in a few words. They are fever, profuse night perspirations, harassing cough, accelerated breathing, rapid and feeble pulse, impaired appetite, thirst, and irregular bowels. There is no œdema, the conjunctivæ are pearly-white, and the urine is unaltered in composition.

To begin the physical examination with the lungs, as the cough and quickened respiration point to them as the seat of the disease, you perceive that there is greatly impaired resonance on percussion over the upper third of the right lung, and auscultation reveals the signs of a small cavity immediately below the clavicle, with broncho-vesicular respiration, and subcrepitant râles over the rest of the dull area. Over the remainder of the right and the whole of the left lung there is hyper-resonance on percussion, and exaggerated puerile breathing on auscultation. The heart, beyond rapidity of action, presents nothing abnormal.

Passing next to the abdomen, note that while the whole region projects markedly, the greatest bulging is at the upper half. In this position the fingers of the palpating hand distinctly detect a solid, smooth mass beneath the integument, which extends upwards to the costal border and downwards to the level of the umbilicus. The lower border is somewhat hard to find, as it seems to fall away from the parietes, but on careful manipulation it can be grasped by the fingers, and is rounded and soft. On tracing this from right to left, one can distinctly mark out an outline exactly resembling that of the right lobe of the liver; while here, a little to the left of the meridian line, is the notch between the right and left lobe, and still more to the left, the margin of the left lobe. To further prove that this mass is an enlarged liver, the dulness over it is continuous with the usual liver dulness, and the upper margin of the latter extends nearly an inch higher than in health. The abdomen below the tumor gives the ordinary tympanitic note on percussion, and is soft and flexible to palpation. There is no enlargement of the spleen. It is particularly to be observed that during the whole of the abdominal exploration the child has evinced no signs of pain nor tenderness. Now, all of these features are characteristic of fatty infiltration of the liver.

The case before you, therefore, is one of tuberculosis with associated fatty liver.

The pulmonary disease undoubtedly antedated and induced the hepatic enlargement, and I think you will be able to trace this etiological factor in the majority of cases occurring among children. The causes, however, may be divided into two classes,—first, the over-use of farinaceous food, which induces a physiological and transitory infiltration of the liver, the excess of hydrocarbons supplied from without being deposited in the cells in the form of fat; second, chronic wasting diseases, such as *tubercle*, scrofula, rickets, caries of bone, chronic intestinal catarrh, and syphilis. Here the fat is absorbed from the subcutaneous and other fat-forming tissues of the body, and the process is pathological.

The rational symptoms, as exemplified in the present instance, belong usually to the causal affection rather than to the hepatic disease. In fact, the latter has no especial symptoms, except disturbance of the functions of the stomach and intestines due to obstruction of the portal circulation; the features of associated fatty changes in the heart and kidneys, that so often direct attention to, or confirm the existence of, similar lesions of the liver in adult life, being of rare occurrence in childhood. Symptoms, therefore, are little to be relied on.

The physical signs so readily elicited today are, on the contrary, quite characteristic. Unfortunately, they are fully developed only in well-matured cases. For, while uncomplicated fatty infiltration of the liver is always attended by an increase in bulk, we may fail to detect a moderate alteration on account of the tendency the organ has, from its softness, to fall away from the abdominal wall.

Understand, then, that the presence of this disease may be absolutely asserted when a tumor, having the outline of the liver, can be felt in the abdomen; when this tumor has a blunted edge, is soft and painless; when the percussion-dulness over it is continuous with the normal liver-dulness; and when there is neither enlargement of the spleen, ascites, nor jaundice. Without these features there must always be uncertainty, and sometimes the lesion is not even suspected until the viscus is exposed on the post-mortem table.

The diagnosis between fatty and amyloid liver is best tabulated as follows:

Fatty Liver.	Amyloid Liver.
Increase in size; the lower margin of right lobe rarely extending lower than the level of the umbilicus.	Increase in size; the lower margin of right lobe often extending down to brim of the pelvis.
Tumor soft, smooth, and doughy.	Tumor smooth but very hard.
Edge blunted, and receding from abdominal wall.	Edge sharp and prominent, often pushing forward the parietes in a visible ridge.
No pain nor tenderness.	No pain nor tenderness.
Spleen normal in size.	Spleen enlarged and hardened.
Impaired gastro-intestinal digestion.	Vomiting and diarrhœa from amyloid degeneration of the mucous membrane of the gastro-intestinal tract.
Urine usually normal.	Urine albuminous, with hyaline tube-casts from amyloid degeneration of the kidneys.
Anæmia.	Anæmia and sometimes œdema of feet and ankles.
No ascites.	No ascites.
No jaundice.	No jaundice.
Usual cause: tuberculosis.	Usual cause: protracted suppuration.

In very exceptional cases, jaundice and ascites are met with in both forms of disease. They depend upon enlargement of the glands in the fissure of the liver, due in the one case to caseous or tubercular, and in the other, to amyloid degeneration.

The prognosis depends upon the cause. If the enlargement be caused by an excess of farinaceous food, regulation of the diet soon produces a reduction in bulk, but when it occurs during the course of a protracted wasting disease, dangerous impairment of nutrition is indicated.

As already stated, then, when fatty liver depends upon dietetic causes, proper feeding is all that is required for its removal. In other cases, the only successful treatment is one directed against the originating disease. So far as the liver itself is concerned, the plan of management is to exclude all starch and fat from the food; to insist on warm clothing, fresh air, and sunlight; to correct dyspeptic symptoms by the administration of alkalies with bitters; to relieve constipation by mild laxatives; and to restore the crasis of the blood in anæmia by the use of some acceptable preparation of iron.

2. *Amyloid Degeneration of the Liver.*—The little patient before you is 8 years of age. He has been an inmate of the Children's Hospital for over three years, and during this time has been treated for suppurative disease of the right hip-joint. He is very anæmic and much emaciated, suffers from attacks of vomiting and diarrhœa, has slight œdema of the ankles and feet, and his urine is highly albuminous and contains numerous hyaline casts. The abdomen is, as you see, very prominent, and on physical examination the liver is found to be immensely enlarged, the lower edge of the right lobe extending quite to the brim of the pelvis; the spleen is also greatly increased in size, and both organs feel firm and dense to the palpating fingers. There is no jaundice nor ascites, and no pain nor tenderness over the liver. There can be no question that this is a case of amyloid degeneration of the liver, with associated amyloid disease of the spleen, kidneys, and gastro-intestinal mucous membrane.

The albuminoid or amyloid liver occurs as a factor in general amyloid degeneration, and is not infrequently met with in childhood. The disease consists in a complete or partial infiltration of the liver-cells by a peculiar translucent, refracting substance, possessing the property of fixing iodine, and assuming a mahogany-brown color, which, upon the application of sulphuric acid, changes to blue, green, violet, or red. This infiltration begins in the hepatic arterioles and capillaries, and at first is limited to the middle zone of the lobules; it then extends to the periphery and centre, destroying the normal elements of the cells, and converting them into irregularly-shaped, glassy-looking masses; with this condition fatty infiltration is sometimes associated.

There is uniform enlargement of the liver; its density is increased; the color is yellowish-gray; the peritoneum is smooth and shining, and the edges are thin and well defined. On section, dry, homogeneous, glistening surfaces are exposed.

The spleen, kidneys, and lymphatic glands are frequently similarly altered, and at times,

also, the mucous membrane of the stomach and intestines.

Amyloid degeneration of the liver is always produced by some chronic disease, attended by suppuration and purulent discharge. Suppurative diseases of the bones and joints, scrofulous abscesses, empyema with a fistulous opening in the chest-wall, dilated bronchi with copious muco-purulent expectoration, chronic pulmonary tuberculosis, and constitutional syphilis are the most frequent causes. It may occur at any age, but is more frequent after the fifth year, and in boys than girls.

The rational symptoms are those of the originating disease. There is no pain nor tenderness in the hepatic region; there is absence of jaundice, distention of the superficial abdominal veins, and ascites. If, however, the glands in the fissure of the liver be at the same time enlarged by waxy deposit, the pressure exerted upon the portal vein and bile-duct will cause jaundice, distention of the superficial abdominal veins, and ascites. The patient may complain of weight in the hypochondrium, and is always weak, wasted, and anæmic, with pale, sallow skin, clubbed fingers, and œdematous feet and ankles. If the kidneys be involved, the urine is increased in quantity, has a low specific gravity (about 1014), is light lemon-colored, and contains albumen, and at times hyaline tube-casts. The dropsy of the lower extremities is due in great measure to this complication, and when the intestinal tract becomes involved there is a tendency to vomiting and diarrhœa.

The physical signs are characteristic: the abdomen is prominent, especially over the upper third, and both percussion and palpation show the liver to be very greatly and uniformly enlarged.

The upper margin of dulness is higher by an inch or more than is normal, while the lower edge of the right lobe is somewhat blunted, but perfectly well defined, and can often be felt below the level of the umbilicus, even, as in the present case, at the brim of the pelvis. The portion uncovered by the ribs feels very dense and firm, and perfectly smooth, except where broken by the natural fissures.

The spleen can often be detected projecting from beneath the left costal border. The absence of splenic enlargement is, however, no proof against the existence of amyloid changes in that organ, as in some few cases there is no appreciable alteration in size.

The course of the disease is chronic.

The diagnosis is not difficult, and is readily made from the physical signs furnished by the liver and spleen, the absence of jaundice and ascites, the previous history of cachexia and suppuration, the character of the urine, the anæmia, and the gastro-intestinal symptoms.

Congestion of the liver, with consequent enlargement, has an entirely different history, rarely occurring in cachectic or anæmic cases. A fatty liver, while large, is soft and yielding to the touch, and is unattended by increase in the size of the spleen or albuminuria.

The prospect of ultimate recovery is better in children than in adults, for, provided the cause of the degeneration can be removed, it is quite possible for the liver to return to its normal dimensions and to an apparently healthy condition, through the active reparative power always present in early life. Nevertheless, amyloid change in the liver adds greatly to the danger of the originating disease, and is fatal in most cases.

In the matter of treatment it is hardly necessary for me to say that attention must first be given to the amelioration or removal of the cause. It is more difficult to cure the disease when once developed than to prevent it by checking chronic suppuration, removing carious bone, healing diseased joints, energetically treating constitutional syphilis, and building up the health in cachectic subjects.

To combat the disease itself, the diet must be as nutritious as possible, taking care that the powers of digestion be not overtaxed, and a moderate quantity of alcoholic stimulants must be taken daily. The child must be clothed so as to prevent all chilling, and must live as much as possible in the sunlight and open air, or, if confined to the house, in a bright, airy room. Alkalies, iron, and iodine are the most useful drugs. Of alkalies, the chloride of ammonium is the best, and it may be given in combination with a bitter. The following prescription answers very well in these cases:

℞ Ammonii chloridi, ʒii;
Infus. gentianæ comp., fʒiii. M.
S.—One teaspoonful four times daily; for a child six years old.

It is often well to combine iron with the ammonium salt; for example:

℞ Tinc. ferri chloridi, fʒi;
Ammonii chloridi, ʒii;
Infus. calumbæ, q.s. ad fʒiii. M.
S.—One teaspoonful three times daily.

The iron may also be given in the form of a modified Basham's mixture:

℞ Tinc. ferri chloridi, ʒi;
Acidi acetici dil., ʒiss;
Liq. ammonii acetatis, ʒx;
Elix. aurantii, ʒv;
Syrupi, ʒi;
Aquæ, q.s. ad ʒvi. M.
S.—One tablespoonful four times a day.

When there is kidney complication with œdema, this formula is particularly useful.

Iodine is most efficient if there be a syphilitic taint. It may be given in the form of iodide of potassium, 5 grains or more three times a day, with a bitter infusion, or liquor iodinii comp. can be employed in doses of 2 drops, well diluted, three times a day.

The complications must be met as they arise. Vomiting, by ice, Apollinaris water, bismuth, and counter-irritation of the epigastrium; diarrhœa, by the vegetable astringents, combined with small doses of opium; and dropsy, by diaphoretics and diuretics.

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*DIET IN FEBRILE MALADIES.**

By Professor Dujardin-Beaumetz, Paris, France.

GENTLEMEN:—If I were to attempt to give a full history of the subject of which I am to speak to-day, one lecture would hardly suffice for all the details, or even to indicate the various phases through which this vexed question of hygienic therapeutics has passed. I shall, then, call your attention only to the principal points of historical interest connected with the dietetics of fevers.

For long ages the medical world followed scrupulously the rules pertaining to diet in febrile diseases so remarkably set forth by the Father of Medicine. In the treatise which he has devoted to this subject, Hippocrates expresses himself thus: "Doubtless in cases where there is much enfeeblement, resulting from pain and acuteness of the malady, it is a great mistake to give the patient large quantities of drinks, ptisans, or alimentary substances, with the idea that the debility is due to the emptiness of the vessels, but it is a mistake, also, to lose sight of the fact that a fever patient is weak by inanition, and to make his state worse by starving him." He adds, with much good sense and discernment, "If, under such circumstances (where the patient has been subjected to a starvation diet), some friend or neighbor, wholly unacquainted with medicine, comes in and recommends nourishing food and drinks, despite the doctor's orders, he will often greatly benefit the patient, and may even get the credit of a cure. It is such cases as these that bring reproach upon the physician, the new man who prescribes food, whether a physician or a layman, receiving praise for having wrought an astonishing cure."†

Galen, Celsus, Ætius, Paulus of Ægina, followed rigidly, with comments of their own, the precepts of Hippocrates, which were summed up in these words: "When you have an acute inflammatory or febrile disease to deal with, you must treat it by a rigorously low diet." At the same time complete abstinence was not enforced, for physicians of Hippocrates's school were in the habit of administering in the acute stages of disease a plentiful supply of infusion of ground barley, which has given to ptisans their generic name (πτισάνη, ground barley). The medical men of antiquity rarely broke through these traditional rules. One of the most curious of these infractions is that of Petronius, who allowed febricitants meat, for which Galen bitterly reproached him.

But towards the end of the eighteenth century (in 1780), when Brown gave to the world his "Elementa Medicinæ," which was destined to revolutionize medical practice, the doctrine of Hippocrates relative to the dietetic treatment of fevers underwent modification. Regarding almost all acute febrile diseases as asthenic affections, the Scotch reformer counselled in their treatment a stimulant and tonic regimen in which food played an important part. These views found a fitting soil in England; they were welcomed also in Scotland, and long afterwards we find Graves successfully defending Brown's doctrine, and showing the danger of abstinence in fevers. He, in fact, considered this position which he had taken respecting diet in fevers as such an important factor of his medical career that he is said to have desired to have this inscription on his tombstone: "Graves fed Fevers."

In France for many years the doctrine of Brown found few partisans; Broussais's physiological system was in fashion, and opposed an invincible barrier to it. Considering all febrile diseases as dependent on gastro-intestinal irritation, the ardent reformer of Val de Grâce, more severe than Hippocrates, condemned his fever patients to absolute ab-

* A lecture on Alimentary Therapeutics.

† Hippocrates, "On Regimen in Acute Diseases."

stinence. Ignorant of the fact that at the terminal periods of continued fevers the nourishment which these patients at that time require provokes a physiological fever (febris carnis), as Bordeau had before observed, Broussais would rigorously remand to low diet or entire abstinence the poor patients who experienced the least febrile return as a result of the first ingestion of food, and it may now be affirmed, without fear of contradiction, that this practice, as judged by its fruits, was most disastrous.

When, at length, the medical profession in France had advanced sufficiently to throw off the yoke imposed by the school of Broussais, more rational views as to the dietetic treatment of fevers began to prevail; the starvation regimen of Broussais was repudiated, and, despite the earnest endeavors of Forget, who took a vehement stand against these "fever-feeders," as he called them, and who naïvely wrote that there was something better to do than to *feed* fevers,—namely, to *cure* them, the great majority of physicians recognized the dangers of abstinence in febrile maladies; the bed-sores so often witnessed in typhoid patients, with other untoward incidents, were laid to the charge of poverty of alimentation,—*i.e.*, were attributed to the abstinence to which the patients had been subjected.

The contest was carried on with ardor by such men as Marotte, Trousseau, and Herard, and in a remarkable discussion which was held almost thirty years ago (in 1857), at the meeting of the Society of the Hospitals, all present were agreed in acknowledging the necessity of feeding persons suffering from febrile affections. If Trousseau, by the eloquence of his teaching, by the charm of his manner, and his personal magnetism, was the most popular advocate of this new mode of alimentation, it must be remembered that it was Monneret who the most boldly carried it out. He was in the habit of ordering broths, vinous lemonade, wine of quinine, and Bagnol's wine for his typhoid patients, and would make them take as much as six quarts a day of nutrient and stimulating drinks.

Note, also, that several years before the prize Corvisart was awarded to a work of Duriard on abstinence in acute diseases, the conclusion of which was as follows: "Abstinence has no influence on the progress of acute diseases; it neither modifies their march nor their manifestations." Thus far only clinical observation had been invoked in favor of or in opposition to a generous alimentary regimen in febrile disorders; but latterly new means of investigation have been put in exercise, and we shall presently see what support these have furnished to either the one or the other of the conflicting views which the medical world has entertained.

To give method to my exposition, I shall first examine the modifications which the febrile process effects in the functional operations of the digestive tube, and in nutrition.

As far as the functions of the digestive tube are concerned, all observers are agreed that typhoid fever profoundly modifies the secretions of the alimentary canal. In experiments made on individuals, the subjects of a gastric fistula, it has been again and again remarked that one of the first symptoms of this fever was marked diminution of the secretion of gastric juice, and even a decided change in the composition of this fluid. It is the same with the other secretions of the digestive tube.

But the most important point is that when you examine the condition of the intestinal mucous membrane in certain fevers, as typhoid fever, the modifications in the functions of this mucosa are still more pronounced. In this disease, in fact, the entire net-work of lymphatics is affected; the mesenteric glands are inflamed, so that the functional operation of the lacteals is profoundly perturbed, and the absorption of emulsified fatty substances and of peptonized albuminoid aliments cannot be effected in the greater part of the small intestine and in the large intestine. Drinks only can penetrate the economy by the venous plexuses of the portal vein.

The question of nutrition is also one of prime importance. I cannot here enter into a general description of the phenomena which characterize fever. Suffice it to say that we know by the examination of the urine on the one hand, and that of the gases of respiration on the other, that the febrile hyperthermia results either from a more active disintegration of the organism, with diminution of the combustions, or from an exaggeration of the combustions. The first theory is held by those who take for their basis the cellular theory of nutrition, and who consider urea as a breaking up of albuminoid substances; the second is held by those who accept as true the views of Liebig, and who regard urea as the direct result of organic combustions.

We have, moreover, a direct proof when we examine the loss of weight of fever patients. In a very interesting thesis, unfortunately in-

complete, by Thomas Layton,* you will find precious indications concerning this loss of weight in different febrile processes. In typhoid fever the mean loss of weight is 238.672 grms. per day; in pneumonia it is 387.6 grms.; in acute articular rheumatism, 386.8 grms. These averages have only a relative value. What it is important to know is the march of this loss of weight in the course of a continued fever. This is what Thomas Layton has not shown very conclusively, and I must protest against one of his affirmations, that in acute febrile maladies the loss of weight is uniformly descending.

You know that from a clinical point of view this is not the case in typhoid fever, where we see the patient preserve, at least in appearance, his ordinary plumpness, to emaciate with extreme rapidity during the first days of his convalescence. The observations, far too few, made by Lorraine, with the help of the scales, do not permit us to decide this question definitely.

Therefore I propose to take up anew this question by instituting daily weighings of my typhoid fever patients, and by comparing the temperature, the urea-production, and the diminution of weight. This is a work of no little magnitude, which will require a long time, but which will enable me, I believe, positively to demonstrate that in typhoid fever the denutrition does not follow, as Monneret and Layton think, a uniformly descending course, and that, on the contrary, it is vastly more pronounced at the decline of the febrile process and in the first period of convalescence.

But this is only one aspect of the question. There is another which presents still greater interest,—namely, the ascertainment of what becomes of the products which result from the disintegration of the organism. This point has been particularly well studied recently by our colleague, Albert Robin. This clinical experimenter has shown us that these products of disintegration accumulate in the economy, and to such an extent that you will find, for instance, in the blood of typhoid patients as much as seven and even nine per cent. of extractive matters, while in the normal state the proportion does not exceed four or four and one-half per cent. The extractive matters are eliminated chiefly by the urine, but also by the fæces and perspiration; and the mildness or gravity of the fever depends on the greater or less facility with which this elimination goes on. There are even at certain moments *periods of discharge*, during which the economy eliminates immense quantities of these extractive matters. These are the "crises" which we witness in the course of continued fevers.

But these extractive principles which thus accumulate in the blood, and which result from the disintegration of the organism, are not the only toxic principles which poison the economy in continued fevers. We are obliged to add the ptomaines and the leucomaines, which take their origin, on the one hand, from septic processes which go on in the digestive tube, and on the other from the presence there of micro-organisms or bacilli. Bouchard and Lépine have clearly shown by the examination of the urine of typhoid patients and its toxic effects the presence of these different products. Thus it is that Lépine has demonstrated that in the normal state the organic matters (products of disintegration) compose but fifteen per cent. of the total toxic ingredients of the urine, while in the febrile state the proportion is as high as forty-five per cent.

From all that goes before, it results, then, that in febrile processes, and in particular in typhoid fever, the digestive tube is not in a fit condition, on the one hand, for the absorption of albuminoid matters, and, on the other hand, the products of organic disintegration accumulate in the system and produce toxic phenomena.

What can be the rôle of alimentation in such cases? Dietetics have a very limited rôle, because only substances which are liquid and charged with salts can penetrate the economy, while albuminoids and fats find in the altered state of the lacteals a serious obstacle to their absorption. In the case which we have under supposition, of typhoid fever, the fatty and albuminoid principles will be furnished, not by the food ingested, but by the individual, who will consume his own fat and muscles.

Reduced to this simple question of the penetration of saline and aqueous matters, diet does not the less play a considerable part in the course of febrile maladies, on condition, however, that the food administered shall be of a liquid nature. The milk and broth which we give to typhoid patients allow us to introduce, on the one hand, a large quantity of water, and, on the other hand, salines in considerable amount. In typhoid

* Layton, "Clinical Study on the Influence of Causes which alter the Bodily Weight of the Adult Sick Person." (*Thèse de Paris*, 1868.)

fever, as Albert Robin has well shown, there is a veritable *mineral inanition*, resulting from the daily losses in potassium, in sulphuric acid, in phosphoric acid, and in chloride of sodium,—losses which take place by the urine, and which amount to 3 or 4 gms. of chloride of sodium, 1.50 gms. to 2 gms. of phosphoric acid, 2.967 gms. of sulphuric acid, and 1.730 gms. of potassium. If you will now refer to the analysis of broth which I gave you in one of the first lectures, and which I here repeat, you will see how well this analysis corresponds to the incessant losses of typhoid patients in saline matters:

	Per 1000.
Water	985.600
Solid organic substance, desiccated at 20° C. in a dry vacuum	16.917
Soluble salts, chlorides, phosphates, and sulphates of potassium and sodium	10.720
Salts slightly soluble, phosphates of magnesium and lime	0.539
	1031.780

Can the same be affirmed with regard to milk? Yes, to a certain extent. By the water and the saline substances which it contains, and which strikingly resemble those of serum, milk responds well to the indication for a liquid and saline nourishment in febrile maladies. But milk contains albuminoids and fats besides. What rôle do these ingredients play? Do they act as food, or are they rejected without being absorbed? We are entirely ignorant; and careful experiments, made with the scales, between typhoid patients fed exclusively with broth and such as have been fed exclusively with milk, will alone enable us to solve this question. For myself, I believe that milk does good in febrile maladies only by the water and saline substances which it contains.

If the saline principles which enter into the composition of foods are suitable for repairing the incessant saline losses of fever patients, the water which is a part of these same aliments answers quite another end,—namely, that of promoting elimination by the urine of the extractive matters accumulated in the economy. This end will be fulfilled not only by the aqueous foods, such as broth and milk, but also by the ptisans, at the head of which we must place lemonade, and this not only by reason of its agreeable taste, but also because quite special antifebrile properties have been attributed to the lemon.

The Arabian physicians, and in particular Isach-Ibn-Amrem, have since a remote period pointed out the advantageous action of lemon-pulp in fevers; and Maglieri, who has lately made trials of this simple remedy in Italy, affirms that the decoction of lemon is equal, if not superior, to quinine. Without going as far as this, one may admit that lemonade fulfils a useful rôle in fevers by introducing water and certain saline principles. But there is a point which ought to arrest our attention a little longer. I refer to wine and the alcohols.

Wine and alcohol have been for ages utilized in the treatment of acute diseases, and in the works of Hippocrates we find frequent allusions to the employment of wine as a tonic and stimulant. But it must be remembered that it is only within the last twenty-six years—that is to say, since the publication of Robert Bentley Todd's classical work,—that alcohol has been methodically employed as a part of the routine treatment of inflammatory and febrile diseases. Todd, in the propositions which he lays down with reference to acute diseases, maintains that the duty of the physician is to find the best means for supporting the vital forces in acute diseases whose natural evolution is towards cure. According to Todd, there is no means for sustaining the vital forces so efficacious as alcohol.

My regretted master, Behier, was one of the most earnest advocates of Todd's method, and it was soon the fashion in France to treat all acute inflammations, such as pneumonia, by alcoholic stimulants. Jaccoud has given in this regard some statistics borrowed from Bennett, which are very favorable to this kind of treatment, out of one hundred and twenty cases of pneumonia the mortality being but about three per cent. In cases of treatment by pure expectancy, the mortality rose to 7.4 per cent., and this was strikingly contrasted with a death-rate of from sixteen to thirty-four per cent. in pneumonias treated by bloodletting and tartar emetic.

This same method has been applied to the therapy of fevers. Fourrier, of Compiègne, showed us in 1873 the good effects which he had derived from alcoholic stimulants in typhoid fever.* Burdel, moreover, has called our attention to the advantages of wine in malarial fevers, and curious instances have been mentioned of individuals affected with intermittent fever rebellious to all other means of treatment, who were cured by dosing them freely with alcohol. Todd had observed similar cases.

To-day, now that the enthusiasm which was

* Fourrier, *Bull. de Thér.*, t. 85, p. 241.

at first awakened by the publication of Todd's views and the results of his practice has subsided, there is, nevertheless, unanimity in recognizing the great advantages of the alcoholic medication in acute febrile maladies. It is more especially in the adynamic forms of these affections that the alcohols are indicated. They also give excellent results in the two extremes of life, infancy and old age. In infancy, as our colleague, Gingeot, has well shown,* alcohol is remarkably well borne, and gives the best results in the treatment of pneumonia; this is also the case in old age. Add, lastly, that in the case of persons addicted to the free use of alcohol, when they are attacked by acute diseases, grave symptoms are almost sure to supervene if the usage of alcoholic stimulants is abruptly suppressed, and we see the necessity in such patients of maintaining the treatment instituted by Todd.

To sum up, then, it is in fevers of an adynamic kind, in the extreme periods of life, and in patients of intemperate habits, that we find the three great indications for the use of alcohol in febrile maladies.

If everybody is agreed in recognizing the good effects of the tonic medication in these diseases, this unanimity ceases when we endeavor to explain what is the mechanism of this favorable action. Some, as Gubler, see in alcohol only a dynamic or force-giving medicament, which acts in fevers by sustaining and augmenting the vital powers. Others consider alcohol as an antithermic medicine, which brings down the temperature and opposes hyperthermia. Still others maintain (and among them Albert Robin) that alcohol opposes organic disintegration, while augmenting the quantity of oxygen inhaled; others, lastly, affirm that alcohol acts only as a food.

For my part, I have deeply studied this question of the physiological action of alcohol, and I believe that all these views are to a certain extent true, and that alcohol acts at once as a food, as a tonic, and as an antithermic; and it is this threefold action which explains its utility in the treatment of acute febrile maladies. I believe alcohol to be a food, and claim that it undergoes a more or less complete combustion in the organism; but this combustion takes place at the expense of the oxygen of the blood. On this account alcohol retards the organic combustions and lowers the temperature; in fact, as Marveaud has maintained, it is a waste-restraining aliment. But it acts also unchanged on the nerve-centres, to which it communicates elements of strength and tonicity, and is a force-producer, as Gubler regarded it.

In our hospital practice we are much in the habit of prescribing alcohol, under the form of Todd's potion, which consists of equal parts of rum or cognac and the *potio diacode*. (The *potio diacode* may be conveniently replaced by sweetened water.—Tr.)

In private practice I think that it is better to discard Todd's potion, and the various modifications thereof, and to substitute certain wines rich in alcohol, such as the Spanish, Portuguese, or Sicilian. These wines are much more agreeable than Todd's mixture. It is desirable to obtain such wines in their purity, which is easier far than to obtain pure brandy, the brandies of commerce being generally an artificial rather than a natural product.

To sum up, gentlemen, diet in febrile maladies, and, in particular, in typhoid fever, ought to consist of liquid substances, containing, besides the water of their composition, certain saline ingredients, tonic principles, and a very small percentage of albuminoid principles.

But this regimen should be rigorously observed, especially in the terminal periods of typhoid fever, at the moment when, with the subsidence of the fever, the patient enters into convalescence.

To repair the losses which prolonged inanition has inflicted on the organism, the fever patient, during the first period of convalescence, is possessed of an insatiable appetite, which causes him to devour everything offered him with avidity. He bolts his food whole, always craving for more. The result is, that the digestive tube is soon encumbered with a load of alimentary substances, which, in its weakened state, it is unable to digest; what with the irritation of the food, and the flatus produced by its decomposition, rupture of the intestines, with fatal peritonitis, is very likely to follow. This rupture is easily explained, when you think of the imperfectly cicatrized ulcers which exist in the ileum. Here, then, your earnest watchfulness ought to be exercised in enforcing extreme moderation in eating, and in permitting only such articles of food as are readily digestible, and are in a state which allows their speedy absorption, the daily rations being little by little augmented as the patient advances towards recovery.

† Gingeot, "Treatment of Pneumonia of Children by Alcohol." (*Thèse de Paris.*)

Such, gentlemen, are the indications which I desired to present relative to diet in febrile maladies. I have done with this first part of hygienic therapeutics. I hope that this study of alimentary hygiene has proved of some interest, and that continually in your practice you will be enabled to apply the precepts which I have laid down. But only a part of my task is accomplished. In another series of lectures I shall complete this subject of hygienic therapeutics by taking up gymnastics, hydrotherapy, balneotherapy, aërotherapy, and climatotherapy, and we shall find under these different heads topics of great interest, and presenting a real utility.

CRITICAL OBSERVATIONS AND EXPERIMENTAL STUDIES ON THE INFLUENCE OF PHARMACOLOGICAL AGENTS ON PERIPHERAL VESSELS.

By Prof. R. Kobert.*

(Continued from page 14.)

PART II.

RANKE† makes the following assertion: The walls of all vessels excepting the capillaries contain nerves which form a fine net-work under the adventitia. Also ganglionic cells have been discovered in the larger nerve-nets. According to W. Wundt,‡ the arteries and veins contain, like the heart, ganglia in their own walls which act as centres of innervation. Besides, they also receive their nervous supply from outside, and consequently depend, as far as their condition is concerned, on both an outward and an inward influence. The smaller arteries, in particular, are subjected to this double source of innervation.

According to Aubert,§ the statements of observers vary materially as to the microscopic behavior of the vascular nerves. Ganglia seem to have been observed only by Beale‖ and Lehmann,¶ and by the latter exclusively in the vena cava of the frog. Arnold** has described and drawn a nerve-plexus, with nuclei and terminal nodes, in the muscular coat of a small artery. Henocque†† described several plexuses on the arterial walls. One of these, the basic plexus, lies at the outer side of the tunica externa; another plexus, the intermediary one, lies in the tunica externa, is derived from the former, and contains nuclei, nodules, and ganglionic swellings; and, finally, an intramuscular plexus, which is derived from the former in the form of very thin fibres, and terminates in the muscles.

Gonjaew,‡‡ however, and, following his example, Gscheidlen,§§ found in the arteries only one net situated in the adventitia, and another one, connected with this, and situated in the muscular coat. Ganglionic cells could not be found by Gscheidlen, though he saw in the vena cava of the frog structures suggestive of ganglionic cells. The terminal reticula of the vaso-motor nerves in the capillaries have been described by Gonjaew and confirmed by Ch. Legros.‖‖

Rouget, Goltz, and the majority of the more recent physiologists, explain the dilatation of vessels, whenever it is independent of the blood-pressure, by the presence of a peculiar mechanism in them, which is allied to the inhibitory apparatus of the heart. In other words, they claim that there exists in the walls of the vessels *a special peripheral ganglionic apparatus which maintains the vessels constantly at a certain level of tension.* The nerve-tracts connected with these ganglia either increase the activity of the former, and thus contract the vessels, or inhibit—*i.e.*, decrease—their energy, and thus produce a dilatation of the vessels. According to B. v. Anrep and N. Cybulski, this latter hypothesis is in perfect accord with all the established facts of anatomy and physiology.

The above quotations indicate that though the anatomists have not quite settled the question of the existence of these peripheral vascular ganglia, their presence is required from the physiological point of view. Goltz, with whom, when his assistant, I had often spoken of this subject, has somewhat modified his former view, inasmuch as he no longer insists upon the necessity of anatomically visible ganglia. He believes, however, that the walls contain some independent regulatory apparatus endowed with the power to dilate and contract the vascular lumen. And this

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† *Lehrbuch der Physiologie*, p. 408. ‡ Ibid., p. 350.

§ Hermann's *Handbuch der Physiologie*, Bd. i. p. 403; Comp. Bd. iv. p. 422.

‖ *Philos. Transact.*, 1864, p. 562.

¶ *Zeitschrift für Wissenschaftliche Zoologie*, xiv., 1864, p. 369.

** Stricker's *Gewebelehre*, i., 1864, p. 346.

†† *Arch. de Physiol. Norm. et Pathol.*, iii., 1870, p. 401. *Vide*, also, *Thèse de Doctorat*, Paris, 1870.

‡‡ *Arch. f. Mikrosk. Anat.*, Bd. xi., 1875, p. 479.

§§ Ibid., Bd. xiv., 1887, p. 327.

‖‖ "Des Nerfs Vasomoteurs," *Thèse de Concours*, Paris, 1873, p. 327.

view I also hold myself. It cannot, of course, concern us here whether this regulatory mechanism refers solely to the muscular coat, or whether the tunica elastica and adventitia also participate in it.

It has likewise been a matter of discussion which portions of the circulatory system are subject to this contraction and dilatation of the lumen. Thus Eckhard speaks of an active dilatation of the *capillaries*. Again, other experimenters who have instituted investigations with digitalis and ergot, speak of a contraction of capillaries terminating in absolute disappearance.

I have never been able to distinguish any appreciable variations in the lumen of capillaries. On the other hand, all observers agree that *arteries* can contract and dilate, and that these variations of the lumen are particularly distinct in the smaller arteries. In veins a contraction has also been noticed by a few observers. At the exhibition of certain agents, of which I shall speak below, I have invariably seen this contraction, and feel disposed to interpret this phenomenon as an active change.

Speaking of the calibre of vessels, I wish to mention still another appearance which manifested itself in every experiment. As soon as the canules were fastened and the transfusion began, all vessels at first became filled and turgescent, and the organ assumed a highly sanguineous appearance. The vein also carried a copious stream, which was only from time to time interrupted by a larger coagulum, which had to be expelled. In this stage the organ had not yet attained complete vitality. As soon, however, as the temperature of the blood has been reached, a great contraction of all vessels is suddenly seen to set in, pallor takes the place of ruddiness, and the venous flow decreases considerably. This stage of active contraction has to pass off first before a regular flow and the beginning of measurement can be thought of.

As to the *quantity of the blood flowing off in a unit of time* (a minute), I found this to vary materially, according to the nature and the size of the organ. On isolated portions of a rabbit's uterus the quantity, of course, was very small, amounting frequently to less than 1 c.c. On the hind part of a dog or the kidneys of a horse the quantity was often less than 100 c.c. And on account of these great variations it is of little value to state on the record the absolute figures obtained from minute to minute. This would only render a comparison of the single trials more difficult. I have, therefore, only stated how many per cent. the off-flowing quantity changed when the height of action of the single agents had been reached. As can be seen by a glance at the accompanying charts, this change was very trifling in some agents, and, again, quite enormous in others. In another column it is stated *how many milligrammes of the pharmacological agent had passed altogether*. Another column contains the *concentration of the latter in the blood, calculated for one litre*. Besides, it is also stated *how many minutes* the poisoning had lasted. All other statements of the charts speak for themselves.

Many readers of this paper will, after inspection of these charts, probably ask why with a number of pharmacological agents I had only instituted one or two experiments, which, of course, must be entirely insufficient to definitely settle the question of the influence of these agents on the blood-vessels. In reply to such queries I would say that experiments of this nature are enormously expensive and laborious, and take up a very great deal of time. The execution of the work embodied by these researches, for example, has occupied no less than three and one-half years. To mention some of its difficulties, I will state that for the transfusion of a single dog's thigh two dogs are always required, one of which, besides, is to be of a rather large size. For the transfusion in a rabbit three animals are likewise always required. Of the bought organs many were found to be cut, and had therefore to be thrown away; others, again, were not fresh enough, and gave no uniform current, while others, again, were insufficiently freed from blood, and consequently gave no current at all. I have not kept any record of the number of experiments which I had to abandon on account of intervening hemorrhages, of deficiency of blood, of stoppage of the current, of bad regulation of temperature, or, finally, on account of access of air, but I know their number is large.

It is known that every alteration of the vascular calibre caused by a pharmacological agent is followed later by a compensatory alteration, however slight it may be. I have not paid sufficient attention to these compensatory alterations to create a special column in my charts for them. At all events these compensatory variations did not prevent me from examining often four various agents on the same organ during two consecutive hours. It is a matter of course that the poisoned blood had to be thrown away in each instance. In experi-

menting with powerful poisons even the blood poured out after termination of the poisoning had to be thrown away, as it was found to still contain poison for some time.

Let us now pass to the interpretation and to a detailed discussion of the results obtained in these experiments.

Chloride of sodium added to the blood in small quantities causes no alterations while traversing the muscular tissues of the thigh. If, however, the blood is mixed in equal proportions with a physiological solution of chloride of sodium, the current rapidly decreases or wholly ceases. If a considerably higher pressure is employed a regular flow can be again obtained, as I found from several experiments instituted in this manner on rabbits and productive of satisfactory results. That the majority of such experiments, however, failed cannot be ascribed to the chloride of sodium, but merely to the dilution of the blood by the added water. This I have proven by obtaining the same result by the addition of solutions of agents which by themselves increase the blood-current.* Chlo-

* *Wiener Academische Sitzungsber.*, vol. lxxxvii., part 3, April, 1883.

CHART I.

Agents having no Distinct Action on the Blood-vessels.

I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
No. of experiment.	Kind of animal.	Organ.	Pharmacological agent.	Pro mille contents of blood in IV.	Duration of action.	Changes in velocity of outflow.	Transfused absolute quantity of IV.	Special remarks.
				Per ct.	Min.	Per cent.	Mgr.	
1	Dog.	Hind extremity.	Chloride of sodium.	0.5	5	−3	75	
2	Calf.	Hind extremity.	Chloride of sodium.	1.5	10	0	1200	
3	Dog.	Hind part.	Urea.	1.5	9	+6	316	
4	Dog.	Hind part.	Glycogen.	0.1	5	+1	9	
5	Dog.	Hind part.	Glycogen.	0.2	10	−2	42	
6	Dog.	Hind part.	Grape-sugar.	0.6	5	−3	55	
7	Dog.	Hind part.	Grape-sugar.	0.6	15	−2	120	
8	Dog.	Hind part.	Kreatin.	0.1	4	+10	9	
9	Dog.	Hind part.	Kreatin.	0.1	10	+6	20	
10	Dog.	Hind extremity.	Sulphate of sodium.	1.0	13	−1	87	
11	Dog.	Hind extremity.	Sulphate of sodium.	1.2	10	−2	110	
12	Calf.	Foot.	Ferro-cyanide of potassium.	1.0	12	+5	89	The statement regarding quantity of the salt refers to the contained free acid.
13	Dog.	Hind extremity.	Citrate of sodium.	1.2	6	0	85	
14	Sheep.	Horn of uterus.	Phosphate of sodium.	2.0	20	0	29	
15	Calf.	Foot.	Chlorate of potassium.	1.0	23	+4	63	In the first few minutes a transient slowing of the flow.
16	Hog.	Kidney.	Iodate of sodium.	1.0	6	−1	53	
17	Hog.	Kidney.	Bromate of sodium.	1.0	9	0	45	At first quickening, but soon passing.
18	Hog.	Kidney.	Bromide of sodium.	1.0	10	0	62	
19	Hog.	Kidney.	Bromide of sodium.	2.0	8	0	144	In the first minutes a quickly-disappearing quickening of the flow.
20	Hog.	Kidney.	Bromide of sodium.	3.0	9	+2	160	
21	Hog.	Kidney.	Bromide of sodium.	1.0	7	0	48	At first acceleration of very short duration.
22	Dog.	Hind extremity.	Antipyrin.	1.0	15	0	68	
23	Hog.	Kidney.	Antipyrin.	0.4	5	+3	38	
24	Hog.	Kidney.	Antipyrin.	1.0	4	+4	90	
25	Hog.	Kidney.	Antipyrin.	2.0	8	−4	105	
26	Dog.	Spleen.	Hydrochinon.	0.4	5	0	20	
27	Dog.	Hind extremity.	Hydrochinon.	0.2	10	0	11	
28	Hog.	Kidney.	Resorcin.	0.5	6	+28	20	
29	Dog.	Spleen.	Resorcin.	0.1	10	0	40	
30	Calf.	Foot.	Alcohol.	2.0	13	0	98	
31	Calf.	Foot.	Alcohol.	2.0	11	−5	72	
32	Calf.	Foot.	Alcohol.	1.0	10	0	60	
33	Calf.	Foot.	Alcohol.	1.0	15	+8	40	
34	Hog.	Kidney.	Chloroform.	2.0	12	0	85	
35	Hog.	Kidney.	Chloroform.	3.0	15	+3	42	
36	Dog.	Kidney.	Caffeine.	0.15	5	+6	15	
37	Hog.	Kidney.	Caffeine.	1.00	6	+16	100	
38	Hog.	Kidney.	Caffeine.	1.20	6	+120	110	
39	Hog.	Kidney.	Cocaine.	0.20	6	0	6	Later a moderate slacking of the current followed.
40	Hog.	Kidney.	Cocaine.	0.12	5	0	10	
41	Dog.	Small intestines	Apomorphine.	0.05	5	−3	3.5	The very active peristaltic movements of the bowels are not altered by the poison.
42	Dog.	Kidney.	Apomorphine.	0.10	5	0	9	
43	Rabbit.	Horn of uterus.	Apomorphine.	0.20	14	0	2	The very active movement of the organ, which is in the first stage of pregnancy, continues, only the waves (of motion) grow more shallow.
44	Sheep.	Horn of uterus.	Emetine.	0.40	6	0	9.5	
45	Hog.	Kidney.	Citrate of ergotine.	0.02	16	0	2	
46	Dog.	Hind part.	Arsenite of sodium.	0.13	10	0	13	
47	Hog.	Kidney.	Arsenite of sodium.	0.40	7	0	32	
48	Dog.	Hind part.	Nitrate of strychnine.	0.02	9	0	1.2	
49	Hog.	Kidney.	Nitrate of strychnine.	0.10	6	+8	6	
50	Hog.	Kidney.	Hydrochlorate of nicotine.	0.10	8	0	9	
51	Dog.	Hind part.	Hydrochlorate of nicotine.	0.20	3	−20	14	
52	Sheep.	Horn of uterus.	Hydrochlorate of nicotine.	0.80	16	0	2.5	

CHART II.

Agents which Dilate the Vessels.

I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
No. of experiment.	Kind of animal.	Organ.	Pharmacological agent.	Pro mille contents of blood in IV.	Duration of action.	Changes in velocity of outflow.	Transfused absolute quantity of IV.	Special remarks.
				Per ct.	Min.	Per cent.	Mgr.	
53	Dog.	Hind extremity.	Sulphate of curarine.	0.05	5	+ 10	2.5	
54	Dog.	Hind extremity.	Sulphate of curarine.	0.10	3	+ 170	6	
55	Sheep.	Horn of uterus.	Sulphate of curarine.	0.20	10	+ 400	4	
56	Hog.	Kidney.	Hydroxide of methyl caffeine.	0.50	8	+ 100	50	
57	Dog.	Kidney.	Hofmeister's platinum base.	0.01	13	+ 29	0.6	All indicated figures refer to PA; dichloride of platinum and ammonium is meant.
58	Dog.	Hind extremity.	Hofmeister's platinum base.	0.01	7	+ 33	0.7	
59	Dog.	Hind extremity.	Hofmeister's platinum base.	0.05	2	+ 58	2	
60	Dog.	Hind extremity.	Hofmeister's platinum base.	0.10	2	+ 88	6	
61	Dog.	Hind extremity.	Hofmeister's platinum base.	0.025	6	+ 80	3	After-effect 12 minutes.
62	Dog.	Hind extremity.	Chloride of sodium and platinum.	0.15	3	+ 42	9	
63	Dog.	Hind extremity.	Citrate of sodium and bismuth.	0.18	3	+ 10	8	
64	Dog.	Kidney.	Tartrate of sodium and antimony.	0.20	10	+ 100	3	
65	Hog.	Kidney.	Tartrate of iron and sodium.	0.30	11	0	13	
66	Calf.	Foot.	Tartrate of iron and sodium.	0.10	12	0	10	The indicated quantities refer to Fe_2O_3.
67	Hog.	Kidney.	Tartrate of iron and sodium.	0.40	8	+ 30	14	
68	Hog.	Kidney.	Tartrate of iron and sodium.	0.44	8	+ 133	41	
69	Dog.	Kidney.	Citrate of sodium and manganese.	0.035	5	+ 65	2.5	The statements refer to MnO.
70	Hog.	Kidney.	Citrate of sodium and manganese.	0.06	7	+ 100	4.5	
71	Hog.	Kidney.	Citrate of sodium and manganese.	0.30	3	+ 274	21	
72	Hog.	Kidney.	Carbonate of lithium.	0.33	5	+ 19	10	
73	Hog.	Kidney.	Carbonate of lithium.	0.33	6	+ 200	30	
74	Calf.	Foot.	Sodium of lithium.	3.60	24	+ 14	110	Action decreases already in the fourth minute of the transfusion.
75	Dog.	Hind part.	Sodium of lithium.	0.90	3	+ 70	90	
76	Hog.	Kidney.	Sulphate of lithium.	2.50	8	+ 98	170	
77	Hog.	Kidney.	Bromate of lithium.	1.00	4	+ 24	80	
78	Hog.	Kidney.	Bromate of lithium.	1.66	8	+ 78	150	
79	Hog.	Kidney.	Bromate of lithium.	1.50	6	+ 101	140	Action decreases already in the fourth minute of transfusion.
80	Hog.	Kidney.	Bromate of lithium.	3.00	4	+ 260	180	
81	Hog.	Kidney.	Iodate of lithium.	1.00	7	+ 0	70	
82	Hog.	Kidney.	Iodate of lithium.	2.00	2	+ 80	80	
83	Hog.	Kidney.	Iodate of lithium.	3.00	9	+ 100	240	
84	Calf.	Foot.	Ferro-cyanide of potassium.	1.00	3	+ 117	33	
85	Dog.	Kidney.	Ferro-cyanide of potassium.	0.10	15	+ 66	25	
86	Calf.	Foot.	Ferro-cyanide of potassium.	0.50	5	+ 32	20	
87	Calf.	Foot.	Ferro-cyanide of potassium.	0.50	7	+ 97	24	
88	Calf.	Foot.	Ferro-cyanide of potassium.	1.00	11	+ 202	39	
89	Hog.	Kidney.	Kairin.	0.20	3	+ 33	14	After-effect 7 min. The blood assumes the color of chocolate.
90	Hog.	Kidney.	Kairin.	0.20	2	+ 105	12	After-effect 5 min.
91	Dog.	Hind part.	Nitrite of potassium.	0.05	5	+ 18	3	
92	Dog.	Hind part.	Nitrite of potassium.	0.50	2	+ 530	32	After-effect 23 minutes.
93	Dog.	Kidney.	Nitrite of amyl.	2.00	13	+ 550	120	After-effect 29 minutes.
94	Dog.	Kidney.	Nitrite of amyl.	5.00	3	+ 900	340	After-effect 22 minutes.
95	Dog.	Kidney.	Isonitrite of propyl.	2.00	10	+ 510	100	After-effect 20 minutes.
96	Hog.	Kidney.	Carbonic oxide.	Little.	10	0		
97	Hog.	Kidney.	Carbonic oxide.	Much.	10	+ 180		
98	Sheep.	Horn of uterus.	Sodium ergotinate.	0.30	12	+ 40	7	The figures refer to free acid.
99	Sheep.	Horn of uterus.	Sodium ergotinate.	0.80	15	+ 200	19	
100	Sheep.	Horn of uterus.	Sodium ergotinate.	1.32	16	+ 400	24	
101	Hog.	Kidney.	Paraldehyde.	1.00	35	+ 105	100	After-effect 20 minutes.
102	Hog.	Kidney.	Paraldehyde.	2.00	7	+ 220	170	After-effect 20 minutes.
103	Dog.	Kidney.	Paraldehyde.	1.00	14	+ 400	43	After-effect 26 minutes.
104	Dog.	Kidney.	Paraldehyde.	2.00	5	+ 1500	160	After-effect 40 minutes.
105	Dog.	Kidney.	Acetal.	1.00	16	+ 100	48	
106	Hog.	Kidney.	Acetal.	1.00	24	+ 400	72	After-effect 10 minutes.
107	Hog.	Kidney.	Urethan.	2.00	5	+ 140	120	
108	Hog.	Kidney.	Urethan.	10.00	3	+ 200	710	
109	Hog.	Kidney.	Urethan.	4.00	3	+ 490	360	
110	Calf.	Foot.	Turpentine.	4.00	15	+ 233	240	After-effect 10 minutes.
111	Calf.	Foot.	Anise oil.	4.00	6	+ 600	125	
112	Calf.	Foot.	Peppermint oil.	0.80	10	+ 500	20	
113	Calf.	Foot.	Peppermint oil.	4.00	4	+ 1900	260	
114	Calf.	Foot.	Ethereal oil of mustard.	0.33	10	+ 200	7	Produced quickening of flow reaches its height in the thirty-second minute (*i.e.*, 20 minutes after termination of the transfusion of the mustard oil), and then slowly decreases.
115	Dog.	Kidney.	Ethereal oil of mustard.	0.68	10	+ 500	45	
116	Dog.	Kidney.	Ethereal oil of mustard.	2.00	4	+ 620	93	After-effect 7 minutes.
117	Hog.	Kidney.	Hydrochlorate of quinine.	0.10	10	+ 50	4	
118	Dog.	Kidney.	Hydrochlorate of quinine.	0.05	20	+ 160	5	
119	Sheep.	Horn of uterus.	Hydrochlorate of quinine.	1.00	2	+ 250	8	After-effect 10 minutes.
120	Hog.	Kidney.	Hydrochlorate of quinine.	0.05	7	+ 500	4	
121	Sheep.	Horn of uterus.	Hydrochlorate of quinine.	1.00	7	+ 3500	15	
122	Dog.	Hind extremity.	Sulphate of cinchonine.	0.10	5	+ 100	1	
123	Hog.	Kidney.	Sulphate of cinchonine.	0.30	2	+ 175	4	After-effect 3 minutes.
124	Dog.	Hind extremity.	Sulphate of cinchonine.	0.30	2	+ 200	5	After-effect 4 minutes.
125	Dog.	Liver.	Sulphate of cinchonine.	0.30	3	+ 200	5	After-effect 5 minutes.
126	Hog.	Kidney.	Hydrochlorate of chinolin.	0.50	3	+ 140	26	
127	Hog.	Kidney.	Hydrochlorate of chinolin.	0.05	5	+ 12	5	
128	Hog.	Kidney.	Hydrochlorate of chinolin.	0.05	10	+ 50	4	
129	Hog.	Kidney.	Hydrochlorate of chinolin.	0.33	1	+ 64	12	
130	Dog.	Liver.	Hydrochlorate of chinolin.	0.50	3	+ 250	10	Transfusion from the artery.

CHART II.—*Continued.*

I. No. of experiment.	II. Kind of animal.	III. Organ.	IV. Pharmacological agent.	V. Pro mille contents of blood in IV.	VI. Duration of action.	VII. Changes in velocity of outflow.	VIII. Transfused absolute quantity of IV.	IX. Special remarks.
				Per ct.	Min.	Per cent.	Mgr.	
131	Dog.	Spleen.	Hydrochlorate of leucolin.	0.10	8	+ 90	3	
132	Dog.	Liver.	Hydrochlorate of leucolin.	0.50	2	+ 100	6	
133	Hog.	Kidney.	Hydrochlorate of leucolin.	0.50	3	+ 106	9	
134	Dog.	Spleen.	Hydrochlorate of leucolin.	0.40	1	+ 160	2.5	After-effect 3 minutes.
135	Dog.	Spleen.	Hydrochlorate of leucolin.	0.40	2	+ 500	9	After-effect 4 minutes.
136	Hog.	Kidney.	Hydrochlorate of leucolin.	3.00	1	+ 700	125	After-effect 10 minutes.
137	Hog.	Kidney.	Salicylate of sodium.	0.20	6	+ 96	12	After-effect 4 minutes.
138	Rabbit.	External ear.	Hydrate of chloral.	1.00	22	+ 50	40	After-effect 5 minutes.
139	Sheep.	Horn of uterus.	Hydrate of chloral.	4.00	7	+ 104	20	
140	Sheep.	Horn of uterus.	Hydrate of chloral.	10.00	5	+ 208	150	After-effect always present, but lasting only a few minutes.
141	Rabbit.	Horn of uterus.	Hydrate of chloral.	10.00	5	+ 230	150	
142	Rabbit.	Horn of uterus.	Hydrate of chloral.	6.00	12	+ 400	90	
143	Hog.	Kidney.	Hydrate of chloral.	1.30	18	+ 400	60	After-effect 4 minutes.
144	Hog.	Kidney.	Hydrate of chloral.	1.30	30	+ 630	70	After effect 5 minutes.
145	Dog.	Kidney.	Hydrate of chloral.	1.00	9	600	50	After-effect 6 minutes.
146	Rabbit.	Hind extremity.	Hydrate of chloral.	5.00	88	500	450	After-effect 5 minutes.
147	Dog.	Hind extremity.	Hydrate of chloral.	10.00	4	1100	480	After-effect 6 minutes.
148	Rabbit.	Hind extremity.	Hydrate of chloral.	1.00	2	+ 800	50	The flow increases during the first few minutes after termination of transfusion of chloral.
149	Rabbit.	Horn of uterus.	Hydrate of chloral.	2.00	9	+ 1900	30	
150	Sheep.	Horn of uterus.	Extr. opii depuratum.	4.00	6	+ 2400	100	Long after-effect.
151	Hog.	Kidney.	Hydrochlorate of morphine.	0.45	7	+ 60	24	
152	Dog.	Hind part.	Hydrochlorate of morphine.	0.40	2	+ 54	50	
153	Rabbit.	Horn of uterus.	Sulphate of atropine.	0.20	14	+ 40	3	
154	Rabbit.	Horn of uterus.	Sulphate of atropine.	0.20	10	+ 40	2	
155	Rabbit.	Horn of uterus.	Sulphate of atropine.	0.20	10	+ 20	1.6	
156	Rabbit.	Horn of uterus.	Sulphate of atropine.	0.20	14	+ 50	5	
157	Dog.	Kidney.	Sulphate of atropine.	0.05	6	+ 55	4	
158	Dog.	Small intestines.	Sulphate of atropine.	0.05	3	+ 80	3	
159	Hog.	Kidney.	Sulphate of atropine.	0.05	7	+ 220	5	
160	Rabbit.	Horn of uterus.	Sulphate of atropine.	0.20	13	+ 260	5	
161	Rabbit.	Horn of uterus.	Sulphate of atropine.	0.20	7	+ 400	3	
162	Rabbit.	Horn of uterus.	Sulphate of atropine.	0.20	8	+ 400	3	
163	Hog.	Kidney.	Atropine.	0.02	4	+ 75	1.8	After-effect 4 minutes.
164	Calf.	Foot.	Free hydrochloric acid.	0.08	10	+ 20	5	Calculated on HCl.
165	Calf.	Foot.	Free hydrochloric acid.	0.16	10	+ 50	8	
166	Dog.	Hind part.	Free hydrochloric acid.	0.04	5	+ 28	4	
167	Dog.	Hind extremity.	Free hydrochloric acid.	0.08	3	+ 20	6	
168	Dog.	Hind extremity.	Free hydrochloric acid.	0.08	9	+ 113	8	
169	Hog.	Kidney.	Free hydrochloric acid.	0.35	10	+ 66	50	Effect gradually lessens in the sixth minute of the transfusion.

CHART III.

Agents which Contract the Blood-vessels.

I. No. of experiment.	II. Kind of animal.	III. Organ.	IV. Pharmacological agent.	V. Pro mille contents of blood in IV.	VI. Duration of action.	VII. Changes in velocity of outflow.	VIII. Transfused absolute quantity of IV.	IX. Special remarks.
				Per ct.	Min.	Per cent.	Mgr.	
170	Hog.	Kidney.	Free sulphuric acid.	0.29	3	— 18	20	Calculated on H_2SO_4.
171	Hog.	Kidney.	Free sulphuric acid.	1.29	4	— 39	21	
172	Hog.	Kidney.	Free sulphuric acid.	0.58	6	— 83	50	
173	Hog.	Kidney.	Free oxalic acid.	0.10	4	— 67	75	After-effect 3 minutes. On two kidneys of
174	Hog.	Kidney.	Free oxalic acid.	0.26	3	— 74	15	After-effect 33 minutes. different animals.
175	Dog.	Hind extremity.	Neutral oxalate of sodium.	0.63	6	— 34	5	Calculated on free oxalic acid.
176	Dog.	Hind extremity.	Neutral oxalate of sodium.	0.10	6	— 58	10	
177	Dog.	Hind extremity.	Hydrochlorate of pilocarpine.	0.20	7	— 34	14	
178	Dog.	Kidney.	Hydrochlorate of pilocarpine.	0.40	10	— 50	16	
179	Dog.	Hind part.	Sulphate of muscarine.	0.10	15	— 20	6	In first few minutes transient acceleration of flow.
180	Dog.	Hind part.	Sulphate of muscarine.	0.10	7	— 10	7	
181	Sheep.	Horn of uterus.	Sulphate of muscarine.	0.5	10	— 30	3	
182	Sheep.	Horn of uterus.	Sulphate of muscarine.	0.5	9	— 45	4	
183	Rabbit.	Horn of uterus.	Sulphate of muscarine.	0.5	14	— 29	5	Wave-motion of uterus in no way influenced by muscarine.
184	Rabbit.	Horn of uterus.	Sulphate of muscarine.	0.5	26	— 30	5	
185	Sheep.	Horn of uterus.	Sulphate of muscarine.	0.5	11	— 30	4	
186	Hog.	Kidney.	Formamidate of mercury.	0.20	18	— 63	6	After-effect 7 minutes.
187	Dog.	Kidney.	Cuprum oxyd. sodio-tartaric.	0.30	7	— 28	6	After-effect 13 minutes.
188	Dog.	Kidney.	Cuprum oxyd sodio-tartaric.	0.02	5	— 27	1.8	After-effect 14 minutes.

CHART III.—*Continued.*

I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
No. of experiment.	Kind of animal.	Organ.	Pharmacological agent.	Pro mille contents of blood in IV.	Duration of action.	Changes in velocity of outflow.	Transfused absolute quantity of IV.	Special remarks.
				Per ct.	Min.	Per cent.	Mgr.	
189	Hog.	Kidney.	Cuprum oxyd. sodio-tartaric.	0.15	5	— 75	3	After-effect 9 minutes.
190	Dog.	Hind part.	Chloride of barium.	1.00	7	— 73	40	After-effect 32 minutes.
191	Dog.	Hind part.	Chloride of barium.	0.50	6	— 82	13	After-effect 49 minutes.
192	Hog.	Kidney.	Chloride of barium.	0.90	3	— 86	25	After-effect 34 minutes.
193	Hog.	Kidney.	Chloride of barium.	0.10	5	— 84	3	After-effect 33 minutes.
194	Dog.	Hind part.	Chloride of barium.	0.10	4	— 59	8.5	After-effect 26 minutes.
195	Hog.	Kidney.	Chloride of barium.	0.05	9	— 67	5	After-effect 28 minutes.
196	Dog.	Hind part.	Salicylate of physostigmine.	0.10	5	— 53	9.8	After-effect 3 minutes.
197	Dog.	Small intestines.	Salicylate of physostigmine.	0.05	4	— 50	3.5	After-effect 40 minutes. The normal peristaltic movements are changed into tetanus by the transfusion of physostigmine.
198	Dog.	Kidney.	Salicylate of physostigmine.	0.08	4	— 84	7.6	After-effect 55 minutes.
199	Dog.	Hind part.	Hydrochlorate of veratrine.	0.10	3	— 93	2.5	After-effect 9 minutes.
200	Dog.	Liver.	Hydrochlorate of veratrine.	0.05	1	— 64	0.2	After-effect 15 minutes.
201	Dog.	Liver.	Hydrochlorate of veratrine.	0.05	2	— 28	0.5	After-effect 13 minutes. } Transfusion from artery.
202	Dog.	Liver.	Hydrochlorate of veratrine.	0.025	5	— 90	1.2	After-effect 13 minutes.
203	Dog.	Hind part.	Hydrochlorate of veratrine.	0.100	3	— 93	2.5	After-effect 9 minutes.
204	Dog.	Kidney.	Antiarine.	0.003	1	— 42	0.2	After-effect 17 minutes. Passing of 1218 c.c.
205	Hog.	Kidney.	Antiarine.	0.005	4	— 63	0.2	After-effect 25 minutes.
206	Hog.	Kidney.	Antiarine.	0.003	2	— 89	0.3	After-effect 47 minutes.
207	Hog.	Kidney.	Sabadilline.	0.033	6	— 17	2.5	After-effect 4 minutes.
208	Hog.	Kidney.	Oleandrine.	0.013	5	— 38	1.3	After-effect 25 minutes.
209	Hog.	Kidney.	Apocynine.	0.013	4	0	1.5	
210	Hog.	Kidney.	Apocynine.	0.040	4	— 50	0.9	After-effect 19 minutes.
211	Hog.	Kidney.	Scillaine.	0.020	6	— 44	1.7	After-effect 14 minutes.
212	Hog.	Kidney.	Scillaine.	0.020	1	— 40	0.2	After-effect 10 minutes.
213	Hog.	Kidney.	Scillaine.	0.005	3	— 50	0.2	After-effect 11 minutes.
214	Hog.	Kidney.	Convallamarine.	0.020	1	— 32	0.8	After-effect 10 minutes.
215	Hog.	Kidney.	Convallamarine.	0.010	2	— 50	0.4	After-effect 17 minutes.
216	Hog.	Kidney.	Convallamarine.	0.013	2	— 57	1.1	After-effect 11 minutes.
217	Hog.	Kidney.	Erythrophleïne.	0.050	1	— 61	0.4	After-effect 22 minutes.
218	Hog.	Kidney.	Erythrophleïne.	0.033	3	— 67	6.0	After-effect 35 minutes.
219	Hog.	Kidney.	Erythrophleïne.	0.025	3	— 80	0.9	After-effect 38 minutes.
220	Hog.	Kidney.	Digitalin (Schmiedeberg).	0.002	4	— 17	0.1	After-effect 3 minutes.
221	Dog.	Liver.	Digitalin (Schmiedeberg).	0.010	5	— 25	0.3	After-effect 5 minutes.
222	Hog.	Kidney.	Digitalin (Schmiedeberg).	0.005	5	— 64	0.5	After-effect 38 minutes. } Transfusion from the artery.
223	Hog.	Kidney.	Digitalin (Schmiedeberg).	0.006	3	— 69	0.3	After-effect 4 minutes.
224	Dog.	Kidney.	Helleboreïne.	0.005	3	— 11	0.4	
225	Dog.	Hind extremity.	Helleboreïne.	0.005	16	— 24	0.9	After-effect 8 minutes.
226	Dog.	Kidney.	Helleboreïne.	0.001	6	— 28	0.9	After-effect 18 minutes.
227	Dog.	Kidney.	Helleboreïne.	0.005	4	— 28	0.4	After-effect 10 minutes.
228	Sheep.	Uterus.	Helleboreïne.	0.100	24	— 30	4.0	
229	Rabbit.	Hind extremity.	Helleboreïne.	0.050	5	— 30	0.8	
230	Rabbit.	Hind extremity.	Helleboreïne.	0.005	2	— 30	0.2	After-effect 18 minutes.
231	Dog.	Hind part.	Helleboreïne.	0.010	4	— 36	0.9	After-effect 21 minutes.
232	Dog.	Hind extremity.	Helleboreïne.	0.004	11	— 42	0.3	After-effect 28 minutes.
233	Dog.	Kidney.	Helleboreïne.	0.030	4	— 48	2.5	After-effect 10 minutes.
234	Rabbit.	Hind extremity.	Helleboreïne.	0.005	12	— 52	0.8	After-effect 37 minutes.
235	Dog.	Kidney.	Helleboreïne.	0.010	3	— 54	0.9	After-effect 40 minutes.
236	Hog.	Kidney.	Helleboreïne.	0.010	6	— 56	1.6	After-effect 48 minutes.
237	Calf.	Foot.	Helleboreïne.	0.010	7	— 60	0.3	After-effect 42 minutes.
238	Dog.	Hind extremity.	Helleboreïne.	0.010	8	— 66	0.9	After-effect 38 minutes.
239	Rabbit.	Hind extremity.	Helleboreïne.	0.050	15	— 82	0.9	After-effect 27 minutes.
240	Sheep.	Uterus.	Helleboreïne.	0.100	29	— 87	2.2	
241	Dog.	Hind extremity.	Helleboreïne.	0.050	7	— 98	7.5	After-effect 83 minutes.
242	Hog.	Kidney.	Helleboreïne.	0.023	6	— 100	2.2	The flow disappears nearly wholly for 3 minutes; after-effect 65 minutes.

ride of sodium is consequently by itself an indifferent agent in regard to muscular organs. This, however, does not hold true in reference to the kidney, where chloride of sodium, being a diuretic salt, increases the velocity of the blood-current. Urea was found to have a similar action, and in transfusions of the thigh appeared rather indifferent, while it increased the current considerably while passing through the kidney, as was previously ascertained by Abeles. I shall publish my observations with this and other diuretic agents in a subsequent paper. Caffeine probably belongs also to this category, as appears from the recent researches of W. von Schroeder* on the diuretic virtues of this drug. Likewise indifferent were found to be glycogen, grape-sugar, kreatin, neutral phosphate of sodium, chlorate of potassium, iodate of sodium, bromate of sodium, bromide of sodium, and fluoride of sodium.

The antipyretics behaved very differently. Quinine, cinchona, chinoline, leucoline, salicylate of sodium, and oil of mustard caused a very considerable acceleration of the current. Resorcin appeared to increase the velocity only when given in large doses, while

* *Centralblatt f. die Med. Wiss.*, 1886, No. 26.

hydrochinon and antipyrin were wholly indifferent. Carbolic acid* even appeared to reduce the volume of the current.

There are numerous authors, particularly Maragliano,† who claim that antipyrin dilates the blood-vessels even in non-febrile persons. I have never been able to confirm this statement either in experiments with blood-pressure or in those with blood-transfusion, and I am consequently entitled to regard this claim as unproven, at least as far as the non-febrile organism is concerned. Kairin,‡ as stated above, behaves entirely differently. Besides, this drug caused, as pointed out first by E. Girat in 1883, and by Morochowez§ in 1884, the formation of considerable methæmoglobin. The other agents which can form methæmoglobin, such as ferrocyanide of potassium, nitrite of potassium, nitrite of amyl, and isonitrite of propyl, cause, like kairin, acceleration of the current. Agents which exercise an alterative influence on hæmoglobin, such as oxide of carbon in larger doses, sulphide of hydrogen (examined by Smirnoff),‖ and prussic acid (examined by Mosso), increase likewise the volume of the current.

That oxide of carbon (after a preceding temporary contraction) causes a pronounced and lasting dilatation of blood-vessels has been proclaimed even before Mosso by Traube,¶ but has only been referred to central causes. Klebs,** moreover, regarded the vascular dilatation as the principal action of carbonic oxide, and recommended ergot as an antidote for it. A. Mayer†† evidently held the same view, for he obtained in hemicrania with carbonic oxide similar results as with nitrite of amyl.

The acceleration of the current caused by free hydrochloric acid probably refers also to its decomposing influence upon hæmoglobin, at least the blood becomes at once colored after its addition.

It is a very notable fact that alcohol and chloroform scarcely affect the velocity of the blood-current in isolated organs. The reduction of pressure obtained in experiments with blood-pressure sets in only after large doses, and is caused very clearly by a central vaso-motoric paralysis. Of all other narcotic agents, urethan is the most indifferent one, as could be readily inferred from Schmiedeberg's investigations. I have only examined urethan on kidneys where the diuretic action of the drug probably interfered with the determination of its action on the blood-vessels. I believe that on muscular organs the effects on the blood-current would have been equally negative.

Paraldehyde, acetal, hydrate of chloral, morphine, and extract of opium, on the other hand, cause a distinct acceleration of the current. The custom originating from Von Mering,‡‡ of employing hydrate of chloral in pharmacological analysis in order to cut off the vaso-motoric centre, is consequently not wholly correct, as an increased dose will cause also peripheral vaso-motoric paralysis together with the central paralysis. The same holds true of nitrite of amyl, the action of which is by Bernheim§§ and Filehne,‖‖ however, regarded as central, while Brunton,¶¶ Wood,*** Richardson,††† Pick,‡‡‡ and others believe more in a peripheral causation.

Basing upon erroneous investigations of the pulse, Leyden and Eichhorst§§§ believe that pilocarpine and nitrite of amyl reduce the tension of the vascular walls. In my researches both drugs acted just the contrary, and even in experiments made with blood-pressure I was unable to determine any resemblance between them.

Regarding cocaine, I find in nearly all non-pharmacological books the statement that it contracts‖‖‖‖ the vessels, and thus causes an augmentation of the pressure.

In my investigations I found cocaine with-

* Not included in the charts.

† *Italia Medica*, Giugno, 1884; *Bullet. delle Scienze Med. Giugno*, 1884, p. 329; *Arch. Clin. Ital.*, 1884, No. 26; compare *Kobert's Jahresbericht der Pharmacotherapie*, p. 313.

‡ Dilatation of peripheral vessels by kairin has been observed by G. B. Queivolo and E. Maragliano; compare *Kobert's Jahresbericht der Pharmacotherapie*, p. 326.

§ *Kobert's Jahr. d. Pharm.*, p. 326.

‖ *Teshenedelnaja Klinitscheskaja Gaseta*, 1884, No. 28.

¶ Traube, *Ges. Beitr. z. Pathol. und Phys.*, Berlin, 1871, vol. i. p. 329; *cf.* Pokrowski, *Du Bois-Reymond's Arch.*, 1866, p. 59.

** *Virch. Arch.*, vol. xxii., 1865, p. 497.

†† *Wein. Med. Presse*, 1865, No. 46.

‡‡ *Schmiedeberg's Arch.*, vol. iii., 1875, p. 185.

§§ *Pflüger's Arch.*, vol. viii., 1874, p. 253.

‖‖ Ibid., vol. ix., 1875, p. 470, and *Du Bois-Reymond's Arch.*, 1879, p. 386.

¶¶ *Ber. d. Königl. Sächs. Gesel. d. Wiss. zu Leipzig*, 1869, p. 285.

*** *Amer. Journ. of Med. Sciences*, 1871, pp. 39 and 359.

††† *Med. Times and Gazette*, 1870, vol. ii. p. 469.

‡‡‡ Pick, "Nitrite of Amyl and its Therapeutic Application," Second Edition. Berlin, 1877.

§§§ H. Eichhorst, "Lehrbuch der Physicalischen Untersuchungs Methoden."

‖‖‖‖ *Cf.* Adolph Witzel, "On Cocaine Anæsthesia," Hagen, 1886, p. 3.

out influence upon the vessels. Apomorphine, which, according to O. Bergmeister and E. Ludwig,* acts upon the cornea like cocaine,—*i.e.*, contracts the vessels,—appeared in my experiments just like cocaine, indifferent in regard to peripheral vessels. Emetine and ergotine proved themselves to be wholly indifferent, which cannot be surprising regarding the latter drug, which my researches† have exposed as generally inert. Ergotinic acid, on the contrary, paralyzes not only the vasomotor centre, but also the peripheral vasomotoric nerves. Arsenic, strychnine, and nicotine were likewise wholly indifferent.

In regard to curare, it has often been said that it does not influence the blood-vessels, and that if a reduction of the pressure is at times observed, this is caused by an adulteration of the drug.

I cannot agree with this view, for I found that curarine obtained from Gehe—possessing a pure and strong curarine action—causes distinct vascular dilatation even in moderate doses. A similar action I obtained from Hofmeister's platinum‡ base and methylhydroxide of caffeine.§ The former, as is well known, has nearly all the effects of curarine, and the latter,‖ like all hydroxides of methyl, acts curare-like in some respects.

The soluble double salts of metals did not by any means act all alike.

Iron was in small doses indifferent, while it increased the velocity of the current in larger ones. Platinum, bismuth, antimony, and manganese caused, even in small doses, a distinct acceleration of the current, while mercury and copper acted just the reverse. Still, these investigations ought to be made on various organs, and not, as in my experiments, exclusively on the kidney, as the specific action of the metals on this organ possibly interferes with the interpretation of the results obtained. The same holds true of iodide of lithium, bromide of lithium, and carbonate of lithium, which I could likewise only examine on the kidney, where they accelerated the blood-current, while I know nothing of their influence on the circulation in other organs.

Agents which, like carbonate of sodium, increase the alkalescence of the blood, increase the volume of the blood-current, while agents like sulphuric acid, which decrease the alkalescence, decrease also the volume of the current. The action of hydrochloric acid has been referred to above. In the action of oxalic acid and its sodium salt the formation of emboli probably causes the decrease of the velocity of the blood.

The ethereal oils, of which I examined oil of turpentine, oil of peppermint, oil of anise-seed, and oil of mustard, all act as accelerators of the blood-current.

Atropine causes an increase of the velocity of the off-flowing liquid, while muscarine and pilocarpine act just in the opposite manner, but not very intensely.

Chloride of barium, physostigmine, veratrine, antiarine, sabadilline, oleandrine, apocynine, scillaine, convallamarine, erythrophleïne, Schmiedeberg's digitaline and helleboreïne acted so intensely and persistently as vascular contractors in various organs that I was forced to conclude that this action of these drugs makes itself likewise manifest upon man. The experience of my own practice in fact teaches me that that exhibition of preparations of digitalis is followed by an intense vascular contraction. I believe, moreover, that this contraction also occurs in the veins. In German therapeutic books I find a remarkable confusion regarding this point. Thus, Cloëtta, for example, says, even in the last edition of his text-book on therapeutics (p. 217), "Dilatation of the renal artery is one of the therapeutic effects of digitalis." The text-books published in the English language entertain likewise confused views in this respect. The view that the increase of blood-pressure caused by digitalis refers to a vascular contraction appeared early in pharmacological literature. Thus, we find it in the writing of Blake,¶ in 1839; Béranger Férande,** Oulmont†† and Segroux,‡‡ L. Brunton,§§ Briesemann,‖‖ in 1867; Fothergill,¶¶ Gourvat,*** in 1871;

* *Centralbl. f. d. g. Therapie*, 1885, No. 5. Separatabdruck.

† *Gynæcol. Centralbl.*, 1886, No. 20.

‡ *Kobert's Jahresber. d. Pharmac.*, i.

§ *Schmiedeberg's Arch.*, 1883, p. 424.

‖ This drug I proved to be rather innocuous. *Vide Jahresber.*, i. p. 155.

¶ *Edinburgh Med. and Surg. Journ.*, vol. li., 1839, No. 139, p. 330; *Journal of Physiology*, iv., 1883, p. 365.

** *Bull. de Thérap.*, lxxiii., 1867, pp. 145 and 202.

†† Ibid., lxxii., Avril, 1867, p. 355.

‡‡ *Gaz. Hebdom.* (II. S.), iv., 1867, Nos. 8, 9, 11.

§§ L. Brunton, "On Digitalis," etc., London, 1868; *cf. Centr. f. d. Med. Wissen.*, 1868, p. 688.

‖‖ C. Briesemann, "Microsc. Untersuch. über d. Wirk. d. Digit., Veratr. und Ergot. auf die Circulation," *Inaug. Essay*, Rostock, 1869.

¶¶ *Brit. Med. Journ.*, 1871; 1st, 8th, 15th, 29th July, 5th August.

*** *Gaz. Méd. de Paris* (III. S.), t. xxv., No. 39, p. 438, and No. 47, p. 534.

Ackermann,* in 1872; Brunton and A. B. Meyer,† in 1873.

But the proofs presented by these authors were so little convincing that Böhn‡ and Görz§ regarded them justly as unsatisfactory and critically untenable. Herman Köhler,‖ in 1876, confirmed the views of the two latter observers. W. Williams showed later very clearly that the influence of substances belonging to the digitalis group upon the heart was sufficiently intense to bring about an extraordinary increase in blood-pressure by itself.

Quite available are also the researches of Henry H. Donaldson and Lewis T. Stevens¶ in Baltimore, and Sidney Ringer and Harrington Sainsbury** in London. These authors, who examined the influence of the digitalis group on the vessels (without the heart) of cold-blooded animals, did not content themselves with the unreliable microscopic examination of vessels, but resorted to transfusions in turtles. Reliable transfusions on organs of warm-blooded animals with the digitalis group do not appear to have been made as yet, for the researches of S. Talma and A. J. von der Weyde are little convincing.

In the continuation of my paper which I hope soon to publish, the researches of these authors will again be referred to.

I do not wish to draw from my own experiments the hasty conclusion that all members of the digitalis group cause a contraction of blood-vessels. Still, I must regard it as settled that *some members of this group produce a pronounced vascular contraction.* In the third part of this paper I shall treat of the members of the digitalis group having a different action.

The same action was manifested by the poison of toads in the transfusion of frogs,†† while in the transfusion of toads no alteration of the blood-volume was observed. Consequently, in the transfusion of toads with chloride of barium, helleboreïne, and digitalis, in doses which in frogs cause a very great reduction of the current, no influence upon the vessels could be made out. These animals, as Vulpian has pointed out, are nearly insusceptible against poisoning by substances belonging to the toad-poison group,—*i.e.*, the digitalis group. (Only if the poison is administered in large doses intoxication ensues.) Quite in concord with this is the fact that the poisoning with toad-poison or helleboreïne succeeds as well in the larvæ of toads as in those of frogs,—the larvæ of toads do not yet secrete any poison, and are consequently still unaccustomed to the action of this poison.

I have dwelt upon this difference of behavior between frogs and toads towards the substances of the digitalis group in blood-transfusions so explicitly because I regard it as the best proof that the reduction of the off-flowing quantity caused by these agents is not the result of mechanical or chemical alterations of the blood or of any other secondary effect, but of an especial physiological action, which of course is only absent in such animals the organs of which are accustomed to poisons of this kind. In the same manner, for example, the organs of morphiophages would not react to small doses of morphine as the organs of other persons, or, in other words, no dilatation of blood-vessels would ensue in the former.

The experiments on cold-blooded animals I have also utilized in order to determine whether in transfusions of the whole animal the systolic cardiac stoppage sets in previous to the vascular contraction. If such be the case the vascular contraction would be a rather secondary phenomenon, would appear only when large doses are given, and would not take place *in vita.* In the determination of these points the results obtained of course differed according to whether the injection of the fluid (serum of rabbits) was sent in a centripetal (vena cava) or in a centrifugal (aorta) direction. In either case I obtained, however, provided the poison was added in a state of sufficient dilution, a distinct vascular contraction. From this fact I conclude that the vascular contraction caused by the digitalis group is not a post-mortem appearance, but belongs essentially to the physiological action of these drugs.

I need not add that I have often observed this phenomenon not only under the microscope but also with the unaided eye.

There was still to be determined whether the vascular contraction caused by digitalis is to be regarded as a muscular or as a nervous

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* *Tagebl. d.* 44, "Naturf. in Rostock," 1871; *Deutsche Arch. f. Klin. Med.*, vol. xi., 1872; *Volkmann's Sammlung Klin. Vortr.*, No. 48.

† *Journal of Anat. and Physiol.* (II. S.), No. 11, 1872, November, p. 135.

‡ *Dorp. Med. Zeitschr.*, iv., 1873, p. 64, and *Pflüger's Arch.*, vol. v. p. 189.

§ Nicolai Görz, "Untersuch. über die Digitalisprepar.," etc., and "Beitrag zur Phys. Wirkung das Digit.," *Inaug. Diss.*, Dorpat, 1873, p. 90.

‖ "Handb. d. Phys. T. rap.," p. 182.

¶ *Journ. of Physiol.*, vol. iv., 1883, p. 165.

** *Medico-Chirurg. Transactions.* London, 1884.

†† Transfusions with blood, of course, and not with solutions of chloride of sodium, are here meant.

effect. I have attempted the solution of this difficult problem in many different ways. Thus I tetanized, after the appearance of vascular contraction during transfusion of a curarized hind portion of a dog, the sciatic nerve by means of faradic currents, a procedure which previous to the poisoning with helleboreïne would have caused great vascular dilatation, exactly as in Bernstein's experiments. During the helleboreïne-poisoning, however, this dilatation did not appear, which can only mean that on account of a musculo-vascular spasm the nervous dilatation did not set in. In this connection I beg to recall the action of muscarine on the physostigmine heart, which is likewise negative, although the two drugs are actually not antidotal to each other.

I also transfused cold organs, and found that the agents having a reputed nervous action, such as atropine, morphine, and hydrate of chloral, did not produce any effects, while helleboreïne in a sufficient concentration acted very distinctly. It is unlikely that this vascular contraction taking place on cold organs is of nervous origin, for the nervous apparatus of warm-blooded animals do not react at a temperature of 15° to 20° C.

A muscular action, on the other hand, is well possible at so low a temperature.

I also transfused a kidney which in midsummer had been exposed to decomposition for fifty hours, smelled rank, and showed a green-blue coloration; the transfusion was effected in the ordinary manner in the heat-box. While the most powerful agents of vascular dilatation produced no alteration in the current, I succeeded in this readily with the aid of convallamarine and helleboreïne. It is scarcely possible that after a decomposition of fifty hours nervous apparatus should still be functionally active, while this can be well presumed in regard to the smooth muscular organs.

Another series of experiments was instituted with the liver. I have inserted in the charts several experiments, which were executed by transfusing the liver from the artery. The organ was then found to react to the poison like any other organ. In transfusions from the portal vein all poisons, with the sole exception of those belonging to the digitalis group, proved rather inert.* Still, I succeeded several times in obtaining a reduction of the velocity of the current by means of helleboreïne and chloride of barium. Boehm† appears to have obtained similar results with chloride of barium. These differential results, according to the starting-points of the transfusion,—the hepatic artery or the portal vein,—can only be explained by the assumption that the muscular coat is very feebly developed in the portal vein, but strongly so in the hepatic artery. I consequently believe that these experiments can at the same time be regarded as proofs that the digitalis action is as purely of a muscular nature in regard to the blood-vessels as it is in regard to the heart.

(To be continued.)

* *Schmiedeberg's Archiv*, vol. iii., 1875, p. 216.

† Mosso's results do not agree with those of Boehm.

ON THE ABSENCE OF THE PATELLAR REFLEX IN HEALTH.

By Lester Curtis, M.D., Chicago, Ill.

NOT long ago, purely as a matter of curiosity, I examined a patient, a lady of some 65 years of age, for the patellar reflex. I found it absent. The phenomenon to which this name has been given has received many synonymes, the most common of which are tendon reflex, knee-jerk, knee-phenomena, etc. It consists in an extension of the leg following a blow on the patellar tendon. Similar phenomena occur sometimes following irritation of other tendons. The phenomenon is spoken of by writers in such a way as to lead the reader to suppose that it is always present in health. Indeed, most of them state distinctly that this is the case. Althaus, in a recent admirable work, says that he has never found it absent in a healthy person, "except in the two extremes of life. It is difficult or impossible to elicit it in some children before they have learned to walk, and also in decrepit old persons, where there appears to be no particular form of spinal disease" ("Sclerosis of Spinal Cord," p. 139). A. Charlton Bastian says, "The knee-jerk occurs in health, so that it is its absence which is of principal significance" (Quain's "Dict. of Med.;" p. 1458). Gower speaks of the phenomenon as occurring in health, but does not refer to any exception ("Diseases of Nervous System"). Erb, one of the first to describe the phenomenon, refers to no exception to its occurrence in health, although he remarks in a general way, and in another place, that in some cases the reflexes are difficult to obtain (Ziemssen's "Cyclopædia of Practice of Medicine," vol. xiii., Wood's ed.). Strümpel says that "after a blow on the tendon there occurs, almost without exception in a healthy person, a more

or less active contraction of the quadriceps by which the leg is extended" ("Lehrbuch der Speciellen Pathologie und Therapie," vol. ii. p. 64). The "almost," etc., here is of course a mere saving clause in case of contradiction.

Works on general practice which, without being very accurate or minute, reflect the drift of public opinion in the profession, are very nearly unanimous in the same direction. Loomis, in speaking of locomotor ataxia, says, "The abolition of the patellar tendon reflex is one of the diagnostic signs of the disease." Eichorst, in "Wood's Library," says, "This is one of the earliest symptoms of ataxia. Its appearance indicates the existence of foci of degeneration in the external portions of the posterior columns in the upper lumbar region of its transition to the dorsal region." Such quotations might be multiplied indefinitely. It is plain, therefore, that the presence or absence of this symptom deserves attention.

Observers are not agreed as to the causation of this phenomenon. The prevalent opinion, however, is that of Erb, that it is a true reflex produced by an irritation of the sensitive nerves of the tendon, which is conveyed to the spinal cord through the posterior roots, and to the motor cells of the anterior horns, where a motor impulse arises, which is conveyed to the muscle. "The reflex centre is in the lumbar region of the cord, in the parts corresponding to the second, third, and fourth lumbar nerves" (Bramwell).

The phenomenon occurs quite independently of the brain, and must occur so long as the machinery by which it is produced is in proper order, just as certainly as the pupil responds to light, or any other of the ordinary reflex phenomena, the disturbance which interferes with the production of the phenomena being of course in the large majority of instances some disturbance in the spinal segment. Prominent among these is the sclerosis of the posterior columns, constituting locomotor ataxia on the one hand and degeneration of the motor cells on the other.

But the person mentioned above is healthy in all respects, and especially so as regards the spinal cord. She is an artist, and, in skill of hand and accuracy of eye, few, even among young professionals, are her equal. She is a good walker, and almost as sure of foot as in her younger days. So far as I could learn, she has never had the slightest symptom that could be considered as indicating disease of the cord. The examination, however, is open to criticism. The percussion of the tendon was done over the clothing, and it is possible that it was not sharp enough to irritate the nerves of the tendon sufficiently, or possibly there may have been an active contraction of the hamstring muscles sufficient to prevent the reflex, though the percussion was repeated many times when she was not looking. I could hardly ask her to allow an examination thorough enough to remove all these doubts, without some other reason than the gratification of mere curiosity.

Althaus says, "The phenomenon may be obtained when the patient is sitting in a chair, and crosses one leg over the other; but, where the legs are short and stout, it is better to let him sit on the table, with the legs hanging down. Where the patient is examined in bed, the limb should be raised by the observer passing his left hand underneath the thigh just above the knee, and giving the tap with the right hand. In general it is not necessary for the patient to be undressed, but where the result is doubtful it is always best to strike the bare skin over the tendon, and it may be useful, especially where the patient appears nervous and excitable, to have his eyes bandaged, so that any interference on his part with the production of the phenomenon may be prevented" (p. 132).

Strümpel says, "In order to call forth the symptom, it is specially necessary that the person investigated shall avoid all active tension of the muscles of the leg, especially the extensor cruris" (p. 64).

I have seen sometimes, from the hands of persons who would feel hurt if they were called clumsy, so heavy a blow given as to produce a vibration that might be mistaken for the reflex phenomenon. The blow should be sharp and quick, from something not too heavy, so as to give an irritation at some depth without jarring the limb. A vigorous contraction of the muscles of the arms will increase the reflex in doubtful cases.

I have examined a good many healthy persons for this symptom since it was first described by Westphal, and have frequently found it absent. These examinations, however, have usually been deficient in some point necessary for scientific completeness. Either precaution was not taken to be sure that the blow was sharp enough to produce sufficient irritation, or the possibility of an involuntary contraction of the muscle was not provided against beyond the possibility of doubt, or the presence of some slight symptom of tabes was not carefully enough inquired into to prevent the possibility of doubt. In many of these

cases, also, no memoranda were made, so that they could be referred to again, and many of the phenomena have slipped from my memory altogether, or the details have become so obscure as to be valueless. But I have one case in which all these conditions have been fulfilled, and that is myself. I have been repeatedly examined for the tendon reflex during the last ten years under circumstances which will admit of no doubt, and the reflex has always been absent. I have never had a symptom of tabes, or any other spinal trouble, and I am sure that those who know me will agree that I have at least as much endurance of fatigue, and as good control of my muscles, as the average healthy man.

It is possible, then, for the reflex to be absent in health, and probably in a large percentage of cases. The persons in whom I have found the reflex absent are all persons of considerable muscular power and of a high degree of tonicity of the muscles, and especially persons of considerable inhibitory power, persons who do not lose self-control by any sudden shock. I suspect that the majority of those who have the reflex are persons of weak nerves and undisciplined muscles, who would scream if some one jumped out upon them from a dark passage, or would be unnerved by a sudden danger,—such persons would be the ones likely to come under the observation of hospital physicians. I doubt whether a hunter who retained his presence of mind upon seeing a grizzly bear suddenly rushing out upon him from a thicket would have much of the reflex, while another who had buck fever upon sight of a deer probably would have it well marked. It certainly is exaggerated in hysterical and neurasthenic cases in whom the inhibitory power is weak. The absence of the reflex is considered to be one of the very earliest symptoms of locomotor ataxia. Strümpel says, "The loss of the patellar reflex is the most constant of all the known symptoms of tabes; it is, indeed, observable so early that the time of its appearance can scarcely ever be determined" (p. 201). And, again, p. 211, "A symptom almost constant and of the highest diagnostic value is the loss of the tendon reflexes, especially the patellar reflex. As already mentioned, the extinction of this reflex is one of the earliest symptoms of the disease, which is of the very greatest significance," etc. It is often almost the only means of distinguishing between locomotor ataxia and certain conditions occurring in neurasthenia and in other affections which may simulate locomotor ataxia, and its importance as a symptom is growing in favor. But if these observations are correct it loses immensely in value. The temptation to theorize is strong, but I will refrain, and only call attention to a recent article by Prof. Hirt in the *Berliner Klinische Wochenschrift* for March 8, 1886, in which he describes three cases of locomotor ataxia with retained patellar reflex.

After some general remarks, he describes the cases as follows:

"On the 25th of April, 1884, Moriz W., a moulder, from Upper Silesia, came under treatment at my polyclinic. The patient stated that he was 57 years old, and that when a soldier, at the age of twenty-one, he had had a chancre, with resulting throat-affection. In early youth, from his tenth to his fifteenth year, he had been an enthusiastic fisherman, and had stood for hours at a time with bare feet in very cold water. His present disease dated from the year 1877, and was characterized, according to his account, by great weakness and pain in the legs, difficulty of breathing, trouble in urination and defecation, impotence. The history of the family was without importance." "On examination it was found that the coarse strength of the muscles was well retained everywhere, and that in no department was atrophy to be discovered. The sensibility was altered in many ways,—first, cutaneous analgesia could be demonstrated over the whole body with the exception of the face and the portion of the head covered by hair. For light pressure the sensibility was, on the contrary, retained, and there were in the neighborhood of both sciatic regions hyperæsthetic zones. Distinct *girdle feeling*, sense of temperature for small differences retained, muscular sense altered. With closed eyes the patient could give no information concerning the position of his legs in bed, and did not know whether the one or the other was carefully raised. Romberg's symptom, ataxic gait. *Patellar reflex on both sides easily and plainly produced*, also the plantar and abdominal reflex. Cremaster reflex on both sides gone. Reflex fixation of the pupil and affection of the eye-muscle could not be demonstrated. Patient had never suffered with diplopia. Pupil of moderate size, reacts very slowly but distinctly to light and accommodative impulse. Paresis of the bladder, unconscious passage of the urine by drops by the impulse of coughing, voiding very slowly, not without burning, boring pain in the urethra. No gastric and no laryngeal crises. Appetite and digestion tolerable; tongue normal; no hemiatrophy." "The circum-

stances which have been represented continued essentially unchanged during a year. In September, 1885, the shooting, lancinating pains were very troublesome to the patient. At the end of November the patient became ill of a double pneumonia, to which he fell a victim on the 17th of December." "Autopsy only partially allowed. Opening of the chest and abdominal cavities was refused by the relatives. On opening the skull, there existed in the brain only a slight congestion of the pia, and its vessels were not abnormal. Brain-substance of normal consistence, in no way changed pathologically. On removal of the spinal cord there was found in fresh transverse section, plainly demonstrable (even macroscopically), gray coloration, and atrophy of the posterior columns. This degeneration could be followed into the middle of the cervical cord, increased in the middle of the dorsal cord, and here the posterior gray columns appeared atrophic. The transition from the dorsal to the lumbar cord appeared, so far as might be judged from the macroscopic appearances, less degenerated. In the middle portion of the lumbar cord, on the contrary, the degenerative process was most distinctly developed. Here also there was atrophy of the posterior gray horns. In teased preparations there were richly scattered degenerated portions, fat-granules, branched cells, and corpora amylacea.

"In what way the degeneration of the single parts spread itself out upon Goll's columns, how Charcot's bandolettes are thereby affected, and whether the division into fields, as Strümpel has described, exists, cannot of course be recognized in fresh or frozen preparations. The description of the single sections of the cord I reserve until after its complete hardening. Here I shall only state provisionally the presence of sclerosis of the posterior columns, so far as it is possible to prove it macroscopically. Nothing was to be noticed macroscopically of a contemporaneous degeneration of the lateral columns or of the direct cerebellar tract.

"The second case concerns the laboring woman Rosina G., still living, from Dürrgoy near Breslau. She was repeatedly examined by me and presented to my clinic. The patient, who was most kindly assigned to me by my colleague, Dr. Magnus, is 46 years old, married since her fourteenth year, has borne ten children, eight of whom died early. She has not been well for fifteen years. Her illness began with active headache, which was especially located in the back of the head, and lasted for years. Soon the feeling of being slightly tired was added to this, so that the patient has for just ten years been very weak on her legs. Five or six years ago double vision occurred, which continued a few months and then disappeared without, up to the present time, returning. Soon frequent active feeling of dizziness. Gradually there developed, first on the right, then on the left side, an optic atrophy; right eye totally amaurotic, left, a great degree of lowering of acuteness of sight. In the year 1882 there appeared for the first time sensible phenomena of irritation in the form of a girdle sensation and severe lancinating pains; at last they were so tormenting that in the year 1884 they sent the patient to bed for weeks at a time. At the same time (1884) there developed urinary difficulty; the water was passed very slowly, almost drop by drop, only if the bladder was in some way strongly filled. By a slight impulse of coughing a small quantity of urine was passed unconsciously. This paresis of the bladder exists still. For the last eight years there has been very frequent and often very severe vomiting of quantities of watery fluid; this symptom is connected with a feeling of dizziness." "At the first examination, May 13, 1885, it was shown that the patient was a strong, robust-appearing person who showed a good condition of nutrition. The investigation of cranial nerves showed nothing abnormal in the olfactory, oculo-motor, abducens, and facial. The right optic nerve showed a high degree, the left a beginning, atrophy. The right half of the face is anæsthetic for all sorts of feeling. The right half of the tongue is not atrophied; it responds neither to sensitive nor taste irritations. The left half of the face and the tongue are normal in relation to sensibility. By examination of the sensitiveness of the rest of the body a difference between right and left was not to be perceived, but there was loss of sensibility to pain in both hands and both legs and feet. The muscular sense is changed. Romberg's symptom. Lying with closed eyes the patient could not tell the position of her legs. Disturbances of motion not perceived. Ataxia not present. Coarse strength of upper and lower extremities normal. By examination of the reflexes, it appears that the patellar reflexes of both sides are present, plain and in normal strength. An increase of the same is just as certainly excluded as a diminution. On questioning the patient, she said that the intense tired feeling and especially the painful vomiting which occurred

daily caused her to come under medical treatment." "The symptoms which have been described have continued up to this time almost unchanged, as I stated several days ago. Damage to the left eye also, as the result of optic atrophy, threatens.

"Finally, the third case concerns a letter-carrier, August W., from Sorgau, in Silesia, for whom I must thank my colleague, Thomas, in Freiburg. The history of his disease is briefly as follows: Fourteen years ago a chancre with secondary phenomena, violent pains in the legs, frightful pain as if pierced with a red-hot knife. Double vision lasting for one year and still existing, severe dizziness in the dark, slight tired feeling, no bladder-symptoms, virility retained, no gastric crises." "The investigation (October 27, 1885) gives: Strong, well-nourished man, with remarkably painful expression of the face, ptosis dextra, paralysis of the left abducens, optic of both sides normal, in the regions of the facial and hypoglossal nothing remarkable, no hemiatrophy of the tongue, sensibility of the face as well as taste normal. On the upper extremity, here and there, cutaneous analgesia; tactile and temperature sensation in the hands diminished. Patient cannot fasten small buttons at his toilet because he does not feel them plainly, widespread cutaneous analgesia of the feet, Romberg's symptom, walking with closed eyes impossible, *patellar reflex of both sides normal*, on the left perhaps somewhat increased. Cremaster and intestinal reflexes indistinct, plantar reflex active, diplopia and lancinating pain still present. A communication has been lately received from Dr. Thomas, according to which the patient has been for some time weak and bedridden. It was stated on the 24th of January that no change had occurred in the above phenomena." "That we have to do with tabes dorsalis in the two last cases (the proof of the first is furnished) appears to me to be without doubt. In Mrs. G. the degeneration has extended farther upwards than usual, and has attacked the ascending sensitive root of the right trigeminus. Perhaps the gastric crises which are here so specially distinct may be traced to an affection of the nucleus of the vagus, as Buzzard has supposed. In other respects the course of the case is typical. The same holds true for the letter-carrier, W., whose complex symptoms appear to render the diagnosis undoubted. *The retention of the patellar reflexes is the only thing remarkable in all three cases*, and it is a question whether the first case established by the autopsy is sufficient to make untenable the view of the localization of the phenomenon which has up to this time been accepted. *A priori*, I might doubt whether this is the case, for in an otherwise extremely extensive degeneration in the posterior columns, exactly the place which has been considered and described by Westphal and others as the anatomical site of the patellar reflexes can remain intact. I am so much the more inclined to this view, as in another case of tabes out of my private practice, which I am not at liberty to publish, *the patellar reflex on one side is retained*, while on the other it disappeared a year and a half ago.

"Here it is in the highest degree probable that we have to do with a one-sided degeneration of a portion of the posterior column. In any case I must refrain from a decided opinion until the undertaking of the microscopic investigation of case W.

"In conclusion, I remark that a few days ago I had an opportunity to describe my case orally to Privy Councillor Westphal. He explained to me, while at the same time demonstrating several symptoms, that he also was preparing observations on two cases belonging to this place, the publication of which had been delayed on account of illness."

35 University Place.

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*THE TREATMENT OF BRIGHT'S DISEASES.**

By F. A. Burrall, M.D.

THE treatment of Bright's diseases has been partly derived from a knowledge of the pathology of these diseases indicated by post-mortem appearances, partly from examinations of the urine while the morbid changes were in progress, and some remedial measures are still empirical. The classifications of Bright's diseases are even yet so various and unsettled that, in considering the therapeutics of the disorders which come under this general appellation, it seems the most practical and direct method to subdivide all the lesions into the two varieties of *acute* and *chronic*, and refer separately to such remedies as are believed to be specially indicated in one form of renal degeneration more than in another. The treatment of complications also calls for a brief reference.

* Read before the Section on Materia Medica and Therapeutics, New York Academy of Medicine, December 15, 1886.

As a type of acute Bright's disease the parenchymatous form is most marked. This variety has also been termed croupal, catarrhal, desquamative, and tubal. Here there is an abnormal increase of blood in the organ, and the tubes are choked with casts and disintegrated tubular products. As a rule, the urine is diminished and albuminous, and there is more or less œdema, usually of the eyelids or face. These are the prominent pathological conditions present. As a result there is varying febrile disturbance, blood-poisoning caused by retained renal excreta is taking place, and the blood is also being deprived of its nutritious elements. The indications are to *rest the inflamed organs; remove retained excreta and wash out the obstructed tubes; restore the kidneys to their normal condition*, and prevent recurrence of attacks. The remedial measures are,—*rest* in bed in a room with a temperature of from 70° to 75°, *dry cups* to the loins, *sufficient diaphoresis*, *diuretics*, and suitable *cathartics* if constipation is present.

Rest is the first indication whenever inflammatory symptoms are present. By it the circulation is calmed and equalized, the nerves are soothed, and rest in bed surrounded by a warm temperature secures better action of the skin and places the patient under favorable circumstances for the application of remedies. Rest also diminishes the exudation of albumen.

Dry cupping to the loins relieves renal congestion and favors diuresis. By this temporary abstraction of blood into the subcutaneous capillaries a diminished pressure is produced in the lumbar arteries which supply the integuments of the loins, and this diverts a certain amount of blood from the renal arteries. The object of the cupping is to draw the blood into the capillaries, in order that it may be taken up and removed by the veins. The cups should be removed as soon as filled, and reapplied. No cups are better for the application of this remedy than the ordinary tumbler, which is always at hand. A good method of applying these is to dampen the bottom of the glass, so that the piece of loose dry cotton which is to occupy the bottom of the glass does not fall out when the cup is used. The skin is to be moistened with warm water, and the glass applied instantly after the cotton is lighted, when an excellent vacuum is produced and the integument rises into the glass. The cupping-glass with rubber bulb is also a convenient instrument for dry cupping. It has seemed to me that when the blood under the cups remained purple and stagnant after their removal, this indicated marked renal congestion, and that the reddened integument more quickly recovered its color in proportion as those symptoms disappeared, which implied the presence of an excessive amount of blood in the kidney. I have not observed this sufficiently to be sure of the fact, but it was suggested by observation in several cases. Hot fomentations to the loins after the cups have been removed also relieve renal congestion.

There is a diversity of opinion with regard to the use of the hot-air bath. It has been said that by promoting perspiration so much fluid is carried away through the skin that an insufficient quantity remains to wash out the obstructed uriniferous tubes. This objection has been met by the reply that when there is much dropsical effusion free perspiration relieves renal congestion and promotes renal circulation by diminishing pressure in the renal vessels. As a result there is a more copious flow of urine. The amount of fluid lost by perspiration can be readily supplied by ingestion of water. The sympathy or supplementary relations between the skin and the kidney are well known, and it is admitted that the skin is an important organ for the elimination of urea. Hence, when the kidney is unable to perform this eliminative function, it would seem rational to stimulate the functions of the skin. My experience leads me to regard the *intermittent* hot-air bath as beneficial, but it is an agent better adapted to some cases than others. I think it is of service in the early part of an attack of nephritis and in impending convulsions, while if a patient is what is termed water-logged and anæmic it is less useful. Sometimes it produces great discomfort and no diaphoresis, and here it should be discontinued. Its use should be accompanied by the free drinking of water. The pack is somewhat similar in its action to the hot-air bath, but is often more soothing.

Stimulating *diuretics* are much less used than formerly in the treatment of this variety of Bright's diseases, since they are more likely to be injurious than beneficial, by increasing the congestion of the kidneys, which is already excessive. What is desired is to cause a sufficient amount of fluid to pass through the kidneys to wash out the retained excreta from the tubes. Water seeks the kidneys as one of its most usual channels of elimination, and this should be drunk freely. The water from some of the mineral springs in this country, such as the Bethesda, or Buffalo lithia, or Poland, also have an excellent diuretic action;

and when, as in some instances, there is an excess of uric acid in the blood, those waters which contain lithia are especially indicated. When, on examining the urine, we find numerous rough crystals of uric acid, we naturally infer that the aggregate effect of these minute jagged particles must be to irritate the delicate structures over which they pass, and that this irritation should be removed by dissolving them. Therefore there is a positive indication for a free use of water, or the dilute alkaline mineral waters, especially those containing lithia or potassium. Why waters which contain so small a proportion of salines should be preferable to pure water is not so well understood, but clinically I think this is demonstrated.

Water containing a small proportion of the bitartrate of potassium is sometimes used instead of the natural spring waters. To insure the diuretic action of salines their specific gravity should be less than 1028,—that is, less than that of the blood.

The drug most used in the therapeutics of Bright's disease for its diuretic action is digitalis, and the infusion is generally preferred. Digitalis does not possess intrinsic diuretic properties, yet its use is followed by marked excretion of urine. Long before its method of action was understood, it was regarded as the best remedy for that variety of renal disease in which there is congestion and tubal obstruction. Under such circumstances, in the stronger light of modern investigation, it is believed that "the contraction of the capillaries causes a greater quantity of blood to accumulate in the arteries, the difference of pressure between the arteries and veins will increase in favor of the former, and the blood will rush through the capillaries at a greater pace, and, owing to the pressure within the veins being lessened, the dropsical effusions will return to the venous system, and at the same time the watery constituents of the blood will increase and cause great diuresis." (Ackerman.)

The infusion is given in doses of from a dessertspoonful to a tablespoonful, three times daily, oftener in emergencies, and Stillé and Maisch direct that when it begins to act upon the kidneys, stomach, pulse, or bowels, the medicine should be discontinued or the dose greatly lessened. After diuresis has commenced, a dessertspoonful of the infusion, two or three times daily, promotes continuous diuresis. Some physicians use this drug much more freely than others, and it would seem as if the old idea of cumulative dangerous action were mythical. It is probable, however, that its use is not devoid of danger, and we are advised that "the first symptom which warns us to omit the drug is irregularity in the rhythm of the pulse." (Binz.)

As the acute symptoms subside, or even earlier, the use of iron enters into the therapeutics of this renal disease. Iron is believed to act by checking hæmaturia, diminishing the general anæmia, and lessening the amount of albumen and casts. Its action is apparently general and local, although iron is said not to be detected in the urine after its use. The tincture of the muriate of iron is the preparation generally used. A point connected with the administration of this drug is its action upon the teeth. Recent experiments have shown that the enamel of teeth, when subjected to a watery solution of tincture of iron, is eroded, and this effect is prevented when the tincture is added to syrup or alcohol. For children the syrup of tolu is an excellent vehicle. A satisfactory method of preventing the injurious action of this medicine upon the teeth is to direct that the patient should rinse the mouth after the dose with a solution of bicarbonate of sodium. Other preparations of iron, such as the liquor ferri oxysulphatis, the syrup of the phosphate, "Basham's mixture," or the tincture of the chloride in combination with acetic acid and ammonia, are also recommended.

Cathartics may be of service in acute Bright's diseases, when there is an obstruction of the portal circulation and unassimilated nutriment is passing off through the kidneys, making the urine dense and irritating with urates or uric acid. It is desirable that all fluid passing through the kidney should be bland, and a cathartic which acts upon the liver promotes excretion of waste products through the intestinal canal. As a rule, drastic cathartics are not much used in acute Bright's disease. They are sometimes of temporary service in the emergency of acute uræmia, when ¼ grain of elaterium or 2 drops of croton oil will divert the serum, and with it the poisons which it contains, into the intestinal canal, and also by relieving renal congestion promote diuresis. The free catharsis produced by *pulvis purgans* is also of similar service.

For restoring the kidney to its normal condition a steady continuance in remedies and careful attention to diet and hygiene are requisite. The iron should be given regularly, with occasional intermissions, if constipation or plethora or nausea render it neces-

sary. Dry cups, applied twice or three times daily, ward off renal congestion, and digitalis promotes diuresis. A pad of flannel, worn over the loins, not thick enough to produce constant perspiration, but of sufficient thickness to insure warmth and protection against sudden chilling, is a most useful remedy. An interval is often left by the modern style of dress between the waistcoat and pantaloons, which exposes the loins to draughts and checks of perspiration, and if we notice the kidneys post mortem, we see how carefully nature has endeavored to protect them by a skilful covering of fat. It is, no doubt, of great importance to guard the loins against draughts of air and sudden changes of temperature.

Although some experiments have seemed to show that a milk diet is followed by the appearance of albumen in the urine, there is no doubt that there is no article of food which is more approved by physicians in this disease than skimmed or unskimmed cows' milk. Milk is bland, possesses the necessary elements of nutrition, and aids diuresis. With a milk diet there is less urea furnished to the blood. Milk is not a beverage but a food, and should be drunk slowly and well mixed with the saliva before swallowing. There are some patients who think they cannot take milk. If this condition, real or imaginary as it may be, is insurmountable, some other bland diet agreeable to the patient should be chosen, with the avoidance of strong tea, coffee, and alcohol. Koumyss is sometimes useful. *Too much* solid animal food is not allowable, since it furnishes an excessive nitrogenous basis for the formation of urea. Perfect assimilation is to be aimed at in selection of diet.

When patients are able, and to complete the cure of acute Bright's diseases, as well as to insure immunity from future attacks, residence for a time in a warm, dry, equable climate is of the greatest service. Meantime, the cupping, iron, and a careful attention to diet and hygiene should be maintained, and the urine examined at frequent intervals for the purpose of watching the progress of the disease and applying suitable remedies.

The treatment of *chronic nephritis* may be summarized as requiring *the improvement of general nutrition, the avoidance of acute attacks, and the treatment of symptoms and complications.* If we were asked to select two remedial measures in preference to all others, I think we should choose freedom from care, and residence in a dry, warm, equable climate. Where these conditions are even approximated, we see life indefinitely prolonged in certain patients. But they are conditions difficult to attain. Care is the lot of humanity, and many sufferers from Bright's diseases are held to the various labors of life by domestic or financial ties. Such should, as far as may be, lead careful lives, and avoid cold, fatigue, and errors of diet. The clothing should be warm enough to prevent chilliness, but not so thick as to cause constant perspiration, and the feet should be kept dry. Milk is a most desirable diet in many cases, and can be made more palatable by the addition of a very small quantity of salt, or it may be peptonized, and the amount taken varies from two and one-half to four quarts daily, with which may be used a few ounces of farinaceous food. Light wines may be used judiciously in some cases of chronic nephritis. While there is remaining renal congestion, or scanty urine, or indications of choked tubules, dry cups and digitalis, with the moderately alkaline waters, should be used. Iron is indicated to avert the anæmia usually present. Diuretics are not required in the case of the cirrhotic or waxy, or in the atrophic stage of the parenchymatous, form of kidney-disease, except as an occasional scantiness of urine may occur, and some authorities hold that iron does not agree with patients who have the cirrhotic kidney, as well as cod-liver oil with the hypophosphites.

Some physicians think very highly of the bichloride of mercury in doses of from $\frac{1}{60}$ to $\frac{1}{8}$ of grain as a remedy in interstitial nephritis (cirrhotic kidney) and in the chronic form of parenchymatous variety of the disease.

Quinine, cod-liver oil, and nux vomica are given as tonics when the indications point to their use.

In the amyloid or waxy kidney, the iodide of potassium and mercury in small doses are recommended if any syphilitic history can be discovered, and the iodide of potassium, with cod-liver oil or the iodide of iron, are said to be serviceable when debility is present. Nitroglycerin has been found of service when increased vascular tension existed. Opium or morphine are remedies which are warmly endorsed on the one hand and regarded with caution on the other. Dickinson says that opium, which is dangerous in case of the granular kidney, may be freely used in the diarrhœa which accompanies waxy disease.

There are several plans of treatment for the *acute uræmia* and convulsions which may appear during the progress of any of the varieties of Bright's diseases. One method is

to relieve the system of retained urinary excreta by acting on the skin and bowels, and to quiet nervous excitability. Croton oil, jaborandi, or the hydrochlorate of pilocarpine, or elaterium, even blood-letting, and the hot-air bath or pack, and chloral to calm the nerves, represent the chief remedial agents under this head. On the other hand, opium or morphine are regarded as the remedies to be chiefly relied upon. The infusion of digitalis is to be given at the same time in ½-ounce doses every three hours until its specific effects are produced. It seems to me that all of these remedies may have their use in certain cases, but there is a feeling among many physicians that opium and pilocarpine should be employed with care. Dry cups to the chest are one of the best remedies in pulmonary œdema, and when the chest is covered with them prompt relief generally follows. For obstinate anasarca incisions into the cellular tissue are sometimes practised with much benefit, relieving swelling and promoting diuresis. It is advisable to bathe the incisions with an antiseptic lotion.

It is difficult to classify the principal remedies in use in Bright's diseases, since many fulfil several functions, but the following is an attempted approximation to indicate their *chief* effects:

Indirect Diuretics.—Digitalis, dry cups, cannabis indica (when hæmaturia is present), caffeine.

Direct Diuretics.—Potassæ bitart., scoparius, water and the alkaline spring-waters, tannate of sodium (gr. xx to xxx), apocynum cannabinum.

Diaphoretics.—Hot-air bath, the pack, warm baths, jaborandi, pilocarpine.

Tonics.—Quinine, iron, cod-liver oil, strychnine.

Medicines which diminish Albumen.—Gallic acid, hydrastis, iron, chloride of gold, fuchsin, and rosanilin.

Promoters of Tissue Metamorphosis (*Metabolists*).—Hyd. bichlorid., chloride of gold and sodium, potassii iodid., liq. potassæ (largely diluted).

Antispasmodics.—Chloral hydrate, opium, potassii bromid., hyd. c. creta (to prevent nausea).

Cathartics.—Elaterium and croton oil (hydragogue), euonymus (cholagogue), podophyllin (cholagogue), pulvis purgans, hyd. c. creta (laxative, Satterthwaite), 3 to 5 grs. daily in cirrhotic kidney.

The course of Bright's diseases is beset with complications, and many cases require most careful watching. The treatment of them is partly that of the basic disease itself, and besides, the general remedies indicated for the various intercurrent maladies. Headache, nausea, gastritis, cardiac hypertrophy, serous inflammations, pneumonia, may all interfere with the comfort or partial health of the patient, and aggravate his sufferings or shorten his disease. They are more or less susceptible of alleviation.

In conclusion, the treatment of Bright's diseases, as of all others, is based upon our knowledge of their nature, and we are struck with the apparent deception connected with renal semeiology. It is not severe pain in the organ itself, but a blurred vision, an œdematous membranum tympani, hemicrania, a puffy eyelid, slight syncope, apparent dyspepsia, nervousness, slight enuresis, which are the signals of a distant morbid process. Often such symptoms are treated in vain, because the real disease is overlooked. It is well in making our diagnosis of any disease to bear these renal peculiarities always in mind. Then our treatment of diseases which seem to have no connection with renal disturbances will, more often than we would suppose, be directed to improving the functions of a diseased kidney.

ON LIGATION OF THE POPLITEAL ARTERY IN ELEPHANTIASIS OF THE LEG.

By Emmanuel Dagnino, A.M., M.D., Caracas, Venezuela.*

I.

IS there any etiological difference between the elephantiasis of the Greeks and that of the Arabians? Though in the actual state of science the general and constitutional causes of the one and of the other disease cannot be ascertained in a precise manner, perhaps it may be assumed that though both classes of elephantiasis, presenting the hypergenesis and proliferation of certain anatomical elements, cause the hypertrophy of some tissues, still they are not the same disease, the same nosological entity. Tuberculous leprosy (in all its varieties) is undoubtedly united to certain alterations of the spinal marrow.

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The experiments of Vulpian on the spinal cord, producing affections of the skin somewhat similar to the cutaneous manifestations of general elephantiasis, command reserve in regard to the diagnosis of some cases, and bring to the mind the conviction that general elephantiasis is undoubtedly allied to spinal alterations. The anæsthesia and hyperæsthesia, the atrophy and hypertrophy of a few tissues, that form the anatomical and pathological symptomatology of patients suffering from elephantiasis, are signs linked to the alterations of the nerves that animate and nourish those parts. This view, based on physiology and experimental physiology, that attributes to the spinal marrow and to the great sympathetic nerve so important and essential a part in that terrible illness, not thoroughly studied until now, would satisfactorily explain the influence of syphilis in producing tuberculous leprosy; for though it is true that in many cases, as I have been able to ascertain, the evident cause of that disease is the sudden cooling of the body when sweating, also it is true that in others, and very commonly, syphilis is the only cause to which I have been able to ascribe elephantiasis, without doubting in the least that, respecting others, contagion and hereditary disposition ought to be taken into consideration.

And now, is not visceral syphilis clearly demonstrated? It has also been proved that there are various syphilitic manifestations (sclerosis, sclerosis with patches and alterations of the gray and white nerve substances in different parts), bringing, as a consequence, functional and organic disorders, to be seen in the groups of symptoms characteristic of elephantiasis. In the history of many patients syphilis plays an important part. My opinion is that syphilis can bring about elephantiasis, just as suppression of sweat by water is a very frequent cause of it; in fact, probably the most common in warm climates. Among many cases I shall relate a very recent one:

N. N., a native of San Rafael, applied for treatment in the Hospital of the Casa de Beneficencia. The physician, Dr. Francisco Suarez, desired me to examine this patient, whose only sickness was blindness. He was a man in good health, of about 45 years, married, with several children, all healthy. For about two years the patient could not apply himself to work; he was a laborer. He had two capsulo-lenticular cataracts, and his eyes were in a satisfactory state. There being neither pains, nor synechia, nor anything that might point out an unfavorable prognosis, I advised the operation of lineal extraction. Both eyes were equally capable of being operated on. I performed both operations, with the interval of ten days, in the presence of Dr. Suarez, the physician of the hospital, Dr. C. L. Sanchez, Dr. Giro, a Cuban, and the assistants of the same hospital. Both operations had the most brilliant success, and the patient left the place with his sight in an excellent state, and not one of the physicians could observe in him the least morbid appearance.

A year and a half ago a man, considered to be suffering from elephantiasis, went to my clinic of the Hospital of Chiquinquira. Trying to form a complete anamnesis by a methodical inquiry, I found that he had never suffered from syphilis, and that the only serious thing he had experienced during his life was an operation that *I had* performed. Then I knew that the unfortunate man I had before me was the same one whose cataracts I had extracted, and who was then enjoying perfect sight. Far better would it have been for him never to have recovered his sight; for as soon as he left the hospital he had gone to his native village, and applied himself to mining to earn his family's livelihood; and being once busily occupied in his labor, all in a sweat and shirtless, received the rain that fell on his bare back. From that very day he felt unwell, and, little by little, supervened the symptoms and signs of this disease. After about three years and a half he was affected with elephantiasis, and being denounced as such to the authorities of the place, the board of health commissioned me to examine him. The unfortunate man was declared by the municipal physicians and myself to be affected with elephantiasis, and was consequently sent to the celebrated Lazaret of the island of Martires, in the lake.

I might mention similar cases. The same thing would happen with syphilis and contagion. Inheritance has a great influence in many cases of tubercular diathesis, for some members of families have been seen to be affected with pulmonary tubercles, others with elephantiasis, which in many of those affected with this complaint, above all in the atrophic form, often ends with pulmonary tubercular phthisis.

II.

The same causes cannot be assigned to partial or local elephantiasis, for it seems that the disease is only to be found in determined

localities, which would tend to prove that the causes are limited. It is impossible to extend one's self in a simple note, wishing only to record a few facts and observations that are not to be overlooked, as nothing ought to be despised that regards the sciences of observation and experimentation. In the locality of Maracaibo (the city, its environs, and adjacent villages) elephantiasis is very common; a proof of it being that the greatest part of those that are in the Lazaret come thence; and there are more than one hundred, besides those that pass unnoticed. Why does the same thing not happen with partial elephantiasis in the arms and legs? I have seen and treated several cases, but none from Maricaibo nor its adjacent villages, but from the Cordillera, the Distrito Sucre (Seccion Zuelia), inhabited by colored people, and a case, if I mistake not, from Coro. I have seen partial elephantiasis of other organs in natives of Maracaibo (one single case), but none of the upper or lower limbs. The first and only case I saw was in the Hospital of Santa Ana, I being an externe, and one of my beloved teachers, Dr. Vicente Linarez, being physician of said hospital. The patient being a tall, lusty metis, having his left lower limb hypertrophied to such an extent that it resembled a big stump (pilon), an elephant leg. No treatment was successful, and the poor man left the hospital without my knowing whither he went, but of course feeling himself always as if he were bound to the earth by that enormous leg, that weighed perhaps as much as the rest of his body.

In 1867 a colored man from Sucre (then Gibraltar) made his appearance in the hospital under my charge, having his left upper limb affected with elephantiasis up to the third part of the arm. He could not support it, as he expressed himself, and begged for amputation as soon as possible, to get rid of that torment. I employed the iodides, *intus et extra*, arsenical preparations, compressive bandages, till I was able to prevail upon him to abandon the idea of having his limb amputated. He was a planter, always in the wet, but never had been affected with syphilis. I did not comply with the patient's wish, fearing that the operation would prove fatal. He then asked for his dismissal, which I granted. Several days after, I was invited by Dr. Francisco Suarez to go to the hospital under his direction to perform the amputation of an arm. At one o'clock P.M. I presented myself, with my assistants, internes of the hospital under my charge, Maniero and Ramirez, and we three were surprised to meet with the same individual that had come to another hospital to demand the amputation I had refused. I frankly manifested my opinion to my friend and colleague; but he considered himself authorized to perform the operation, inasmuch as no remedy could free the desperate man from that burdensome arm. Declining for my part all responsibility, I performed the operation in the upper third, expecting to find there the tissues uninjured. I must say that the vessels were in perfectly good state, the ligatures were easily applied, the dressing according to the ordinary method employed at that time, and, though we all feared that the process of cicatrization would be unsuccessful, the healing was rapid and complete. The patient left the hospital and I lost sight of him.

About six or eight months after, the same person applied to the Hospital of Chiquinquira, where he was admitted. In the visit I met again with that unfortunate man, whose hopes had so soon vanished away, having then his left lower limb affected with elephantiasis. What had produced that terrible repullulation of the fatal disease? I do not know, but I noted down that fact, which I did not consider extraneous to the annals of science. I believe I have read something similar in an article of the Medical Dictionary in fifteen volumes, published from 1830 to 1835, and perhaps owing to that reminiscence I refused to accept the amputation. The general condition of the individual was bad: pallid, worn out, strengthless, destitute of digestive powers, in a diathesic state, having a lower limb enormously hypertrophied, with the characteristic aspect of elephantiasis; and lingering with a vespertine fever, died a few days after, not in the hospital, but in a village.

After I performed the amputation of the arm, and being convinced that the tissues of the stump were uninjured, excepting some connective tissue about the sheath that was hypertrophied, we proceeded to the dressing of the wound, and afterwards applied ourselves to the methodical inspection of the mutilated limb. In the first place we dissected the sheath, and found the artery and veins uninjured as far as we could follow them; but the lymphatic vessels were hypertrophied, soft to the touch and the scalpel, in all the length of the diseased limb, having a yellowish color, and in some parts rather pale gray. After the inspection, we concluded that the hypertrophied state called partial or local elephantiasis had its seat in the white vascular or lym-

phatic tissue. Is this hypertrophic disease a chronic lymphangitis? Is there any foreign element to the organism related to the places where this complaint is frequent (the Antilles)? Is it a parasitic disease that baffles all the therapeutical agents? I cannot say, and only wish to express my suspicions and doubts to scientific men; but whatever may be the extraneous cause, the anatomical tissue on which it acts is the tissue of the lymphatics.

How should we explain the metastasis of which I have spoken in this particular case? It is not probable that when the arm was amputated a germ of the disease should exist in the left lower limb; for, in the scrupulous inspection made over the body of the patient, none of the physicians observed the least thing that might point out the reappearance of the complaint in the left lower limb. This is certainly one of so many organic phenomena that are not to be scientifically explained. The mumps that descend to the pubic region, the phlegmon that appears sometimes in the calf of the leg in consequence of internal urethrotomy, the reappearance of some eruptions, as daily seen in medical practice, are positive phenomena not satisfactorily explained; but that fact has so far impressed my mind as to make me suspect that local elephantiasis may be allied to a general alteration of the liquids of the organism. In the second appearance of the disease, that man was not the same physiological subject; for in the first he was a healthy-looking man, excepting his burdensome arm, but in the second he had a sickly aspect and a deep alteration of the functions of nutrition. He was in a cachectic state. What had caused that change? I cannot tell, but some morbid element acted on that organism, infecting it, besides inducing hypertrophy of the left lower limb. So much darkness is to be dispelled only by gathering many similar facts and thoroughly studying them.

I entertained the conviction that this sickness was incurable, as the trial of the principal therapeutical agents, and even the amputation, had been altogether unsuccessful; but in 1873 I read in the *Bulletin de Thérapeutique* statistical information in regard to partial elephantiasis, in which the eminent observer proved that the ligation of the main artery in the diseased limb produced absolute amelioration, even the complete cure, according to several cases he had gathered.

The said paper mentioned about thirty successful cases of operation, and, on reading those observations, I determined on trying the ligature in the first case that might present itself. The Casa de Beneficencia afforded it me,—a white, middle-aged man, from the Cordillera, who applied to that asylum on account of an enormous swelling of his left foot and leg. The physician of the hospital, Dr. Francisco Suarez, diagnosticated partial elephantiasis, and was perfectly right in so doing, for the progress, the aspect, and all the circumstances of the case rendered this diagnosis evident, even to those destitute of experience. That patient was not only a subject of curiosity to the young students, internes and externes, but also a focus of infection to the hall where he had been placed, and a torment on account of the peculiar stench that came from him. The hypertrophy of the skin and of the subcutaneous tissue was such that the foot and leg were largely and deeply fissured, discharging a kind of yellowish serous pus, and diffusing an offensive and insupportable stench, that did not disappear even after applying the most powerful antiseptics. Dr. Suarez had submitted the case to the most energetic treatment, but without the slightest benefit. The physician had the kindness to put him under my care, and I proposed the ligation of the popliteal artery as the only resource, and both physician and patient accepted my opinion. Fixing the day for the operation, I performed it, assisted by several physicians and the internes and externes of the hospital, who now are all graduate and perhaps all remember well the case I describe, that must be registered in the annals of this asylum. The first case that was to be treated by ligation inspired natural curiosity. The disease had invaded all the leg and the popliteal region. The ligature could not be made according to the classical method, having to meet with abnormal difficulties, owing to the pathological state of the tissues. The skin was actually very thick, and a great portion of adipose tissue, hypertrophied and soft, formed a barrier before reaching the vessels that were imbedded in hypertrophied connective tissue, so that the incision had to be larger than ordinary, the artery being placed at a great depth. At last, having reached it, and isolating it, the needle was passed and the knot secured. The proper dressing was applied, the patient placed in the supine position, with the leg in a state of semiflexion.

The limb, of course, became rather cold, and I retired after prescribing the means of checking the effects of the sudden interrup-

tion of the circulation. On the following day I found nothing particular, only it seemed that the sero-purulent discharge produced by the fissures had diminished, as was also the case with the bad smell. After the lapse of about fifteen days the wound was healed without any inconvenience. By that time we were all convinced that the local complaint had evidently improved: the fissures disappeared, the skin looked thinner, and the color of the limb was more like the natural. The operation had favorably influenced that desperate case, therapeutically considered. Two months after the operation the patient walked freely about the hospital, and one day was dismissed, not by the physician, but by the director, his place being wanted for a patient that urgently required it. This was my first case of this class, and a very successful one indeed.

Some time afterwards I had in the hospital under my charge a case of elephantiasis of both legs, a white man from the Cordillera, 45 years of age, who was in a similar condition to the former patient, and, having proposed the operation, he submitted to it. I performed the ligation of the left popliteal artery in the presence of several physicians and students in service, not considering it prudent to proceed to both ligatures on the same day. This operation was perfectly well performed in the space of twenty minutes, having had the aid of Drs. Sanchez, Rincón, C. Oguendo, and others. The case was a very happy one in its results; and the patient seeing that in a short time his leg and foot tended to regain the normal form, asked for the second operation, which I ceded to Dr. Rincón, a skilful operator in the service of the hospital, who, having the aid of Dr. Oguendo, performed the ligation of the artery in the other limb, with the same successful result as the former. That man left the hospital nearly in perfect health, after having suffered a severe attack of yellow fever, which he recovered from.

These three cases of ligation of the popliteal to cure elephantiasis of the leg must be taken into consideration by those who practise in places where this disease is frequent or endemic. The ligature of the lingual has been recommended against the epithelioma of the tongue (its point). From the results I have obtained in the ligation of the popliteal, I am inclined to advise it before trying the amputation that nearly always brings but a transient cure, for soon after it the infected submaxillary ganglions announce the reappearance of the terrible evil in another very important region.

CURE OF AN ANEURISM BY SUBCUTANEOUS INJECTIONS OF ALCOHOL.

In a case of extensively branching aneurism of the vessels of the occipital region, which had endured seventeen years, resisting all treatment, PLESSING injected alcohol with good results. Beginning with a thirty per cent. solution every two days, he soon increased the strength of the solution to seventy-five per cent., allowing a longer time to elapse between the injections.

In commencing the treatment, a dose of 20 minims was injected in four or six points of the tumor at one-half an inch from its border.

Pain, moderately severe, followed, but ceased in half an hour.

As the tumor became smaller and harder, the injections were made more nearly in the centre.

In two weeks' time a firm infiltration had formed about the tumor's margin, the skin was less tense, and the pulsations weaker.

In about a month, after the use of six ounces of fluid, the tumor was a firm mass, which showed pulsation in two points only: a necrosis of the skin occurred at these points, and erysipelas spread from these lesions. The infiltration of tissue partly disappeared; the pulsation did not return. In two months' time the patient was cured, and several months have elapsed without a recurrence. Pulsation and infiltration have alike disappeared.—*Deutsche Medizinal Zeitung*, November 25, 1886.

PEPTONE SUPPOSITORIES.

SAUTER prepares these suppositories with cacao butter, each containing twenty-five grains of peptone: they are mixed, and kept cold to prevent the fat from becoming rancid.

In cases where patients cannot be nourished in the normal manner, they serve an excellent purpose, fifteen grains of dried peptone equalling two and one-half drachms of meat in nutritive value.

Children may be given one suppository four times daily; grown persons, two three times daily. The suppository should be lubricated with olive oil, and the rectum previously cleansed by an enema.—*Pharmaceutische Post*, November 20, 1886.

The Therapeutic Gazette

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Leading Articles.

DOSAGE.

IN the reading of a suggestive address upon the present state of therapeutics given by Dr. William Whitla, before the Ulster Medical Society, our attention was forcibly attracted by an account of his experience in one of the London hospitals. A brilliant clinical lecturer, speaking of the treatment of chorea, said, "From what I know and have seen of the pathology of chorea, I did not believe that arsenic could be of the slightest use to it; nevertheless, I determined to prove it, and I have demonstrated the fallacy which some men still cling to. I treated so many cases of chorea with teaspoonful doses of aqua camphora, and a similar series with arsenic, and the results were precisely similar. My large class of students have taken a deep interest in the experiments, and you can ask any of them do they believe in arsenic now." Possibly the distinguished physician knew positively very little about the pathology of chorea, certainly he failed to comprehend at all the therapeutics of the disease; for Dr. Whitla found that he was giving Fowler's solution in exceedingly small doses, whereas it is perfectly established that to have an effect the arsenical solution in chorea must be administered in ascending doses until it produces puffiness about the eyes, albuminuria, or a marked gastro-intestinal disturbance, or, in other words, until it produces slight toxic effects. For the successful treatment of a disease the right remedy must not only be employed, but it must be given in the proper dose and in the right manner. Very frequently it is essential to produce distinct physiological effects of the drug; but in some cases a long-continued mild influence is necessary. Sometimes a single hard physiological blow will produce an effect not to be obtained by even a very continuous repetition of slighter blows, precisely as a rotten log may yield to a single powerful blow from the axe, but receive innumerable taps without splitting.

Although the subject has been so often written upon, and is so familiar as to be trite, yet possibly a few practical illustrations of the remarks just made may be of some service to some of our readers. At least in this part of the world strychnine is frequently prescribed in doses of a 40th to a 60th of a grain as a tonic during the convalescence of acute diseases, or during the nervous exhaustion which so frequently results from overstrain, or from the long-continued effect of hard work and cold weather during a long winter. In the amounts named the alkaloid is probably serviceable as a simple bitter in increasing the tone of the digestive organs, but that it has any general effect upon the vaso-motor system or upon the general nutrition is highly problematical. As an ordinary dose, $\frac{1}{20}$ of a grain of strychnine is not too large. We have given it three times a day in cases innumerable, and have never in more than one or two cases seen any evidences of its peculiar physiological action. When, as in protracted convalescence, or in extreme nervous exhaustion, or in the rapid loss of power of the spinal cord sometimes produced by metal-poisoning, a pronounced strychnic effect is desired, the doses should be rapidly increased until slight muscular stiffness, general unrest, or other evidences of toxic effect be manifested.

Some years ago it was our fortune to see a case in which after an acute illness the patient failed utterly to recover. Weeks went by, and there was no gain of strength or nutrition, although there was no disease present. Strychnine had been given in doses of $\frac{1}{30}$ of a grain three times a day. The nurse was ordered to give four granules a day, but thought that the physician meant to give four granules at a dose. The result after the third dose was a

decided but not serious attack of strychnine-poisoning, the secondary effect being that in two or three days the patient gained a great deal more in strength and general tone than he had previously in as many weeks, and in a very short time was practically well.

Not long ago we were called to a child five years old, suffering from violent sore throat and acute enlargement of the cervical glands, but without faucial exudation. We ordered two drops of tincture of belladonna to be given every two hours until our next visit unless some evidences of its action appeared. It so happened that the directions were plainly written upon paper, but the nurse gave 20 drops of the tincture until the child had taken 80 drops. A distinct poisoning resulted, though the symptoms were not very alarming and did not require treatment. The enlargement of the cervical glands and the sore throat disappeared in the night.

We sincerely trust that the lesson we are attempting to inculcate in this editorial will not be misunderstood. It is not that medicine should be given in indiscriminately large doses; it is that the physician should study the dose as carefully as the disease or selection of its remedy, and should adapt the dose, to the needs of the patient. We have seen a very minute dose exactly meet the requirements when a large dose of the same remedy would do harm. Thus, whilst in chorea arsenic must be given in overwhelming dose, in certain conditions of the mucous membranes, especially of the throat, good is achieved by giving very small amounts of the alterative for a length of time. There are certain persons whose throats become inflamed upon the least exposure to cold, the attacks yielding readily to treatment, but continually recurring. One or two drops of Fowler's solution given three times a day for four or five months will often so modify the constitution of the patient that the throat will remain well. The matter is one of considerable importance, since it is probably possible sometimes to stave off or prevent serious disease of the pulmonic mucous membrane which may end in a chronic consumption.

The excessive administration of medicines is a great evil. The physician should know just as well when to withhold as when to give. Boldness should be tempered by caution, and caution should be upheld by boldness.

VENESECTION.

WE have recently received the first volume of the "Travaux du Laboratoire," Université de Liège, under the editorship of Professor Fredericq. The volume contains researches of interest, most of them too purely physiological to be discussed in detail in our columns. There is, however, an elaborate study of the effect of the abstraction of blood which has a direct bearing upon practical therapeutics. Professor Fredericq finds that the effect of bleeding upon the cardiac pulsations is produced through the pneumogastric nerve, and varies in different animals according to the power of this nerve. In the dog and the pig the cardiac pulsations are accelerated and become uniform. In the ox and probably also in man the pulsations are simply accelerated. In the rabbit, in which the pneumogastric nerves have little power, the cardiac rhythm is not influenced. Contrary to opinions generally received, and based upon experiments made in the dog, in the rabbit the arterial pressure is greatly and enduringly lessened by a bleeding which does not exceed one per cent. of the body weight.

The effect of the bleeding upon the respiratory changes and upon calorification varies according to the state of the animal. In the rabbit during digestion bleeding produces marked lessening in the amount of oxygen consumed and the carbonic acid liberated, also in the amount of heat which is radiated from the animal when placed in a calorimeter. In the fasting rabbit the decrease in the consumption of oxygen is only momentary. In a little time the interstitial combustion rises again and frequently passes much beyond what it had been before bleeding. The animal put in the calorimeter gives off more heat than before the bleeding, although the rectal temperature is usually distinctly abated. It would seem, therefore, that bleeding gives rise to the dilatation of the cutaneous vessels.

Professor Fredericq conceives that his researches warrant the following conclusions:

First.—That it is only proper to employ bleeding to lessen the mass of blood when there is intense pulmonary, cerebral, or other congestion which demands immediate relief. That under these circumstances the bleeding simply is a means of putting aside an immediate danger.

Second.—That when, as in pulmonary œdema or in acute pneumonia, or in pleurisy, there is a sudden outpouring from the blood, bleeding

may do good by leading to the absorption of interstitial lymph.

Third.—Although in the dog the effects of bleeding upon the blood-vessels are so transitory, yet their permanency in the rabbit indicates that they may also in man be enduring, and therefore it is not irrational to withdraw blood when there is high vascular tension and imminent cerebral congestion or apoplexy.

Fourth.—That though the effect of bleeding upon the calorification might at first thought seem to indicate a field for usefulness in the treatment of febrile and inflammatory disorders, yet as bleeding seems to produce excessive destruction of the albuminous substances of the system, and therefore acts like fever, its employment for the lessening of fever is a very doubtful procedure.

STROPHANTHUS.

IN a previous issue we have already alluded to the cardiac stimulating powers claimed to be possessed by this drug. Unfortunately, the plant has been only obtained with great difficulty. There seems also to be considerable doubt as to what form of preparation is therapeutically most active, and we find various drug firms are using different parts of the plant for preparing the tincture, although Prof. Fraser has claimed that the seeds alone contain the active principle of this drug.

Dr. Fraser's formula for making this tincture is that one ounce of seeds, first deprived of their oil or fat by means of ether, in which the active principle is insoluble, is percolated by rectified spirits to produce eight fluidounces of tincture. Dr. Fraser has used tinctures of varied strength, but, finding the above too concentrated for convenient use, recommends one in which one part of the seeds alone without the hairs should be percolated with ten parts of rectified spirit, the dose of this tincture being 4 to 8 minims. He is especially emphatic in stating that the seeds and pods should not be used together, for, although the pods contain active principles, the relation of the tincture obtained from them and the tincture made from the seeds has not been determined.

Mr. W. Martindale, writing in the *Pharmaceutical Journal and Transactions* for November 20, 1886, states that he has examined tinctures prepared from the seeds, from the pericarp, and from the hairs, and, though he has found that all these parts contain the active principle, the tincture prepared from the hairs is weakest, and that from the seeds is the strongest, in acting on the heart-muscle. They are also all of them powerful muscle-poisons, and, according to the statement of Mr. T. F. Bradford, this particularly applies to the pod tincture, but more experiments are needed to decide accurately their relative value. As the drug is an extremely expensive one, it is evident therefore that if other parts of this plant, in addition to the seeds, contain the active principle, they might for the sake of economy be used for preparing the active principle.

In this country Dr. C. L. Dana has extended our knowledge of the action of this plant through the report of a series of cases read before the Practitioners' Society of New York, on December 3, 1886 (*Medical Record*, December 18, 1886), in which he has used the drug. In one or two cases of Bright's disease in which Dr. Dana used this drug little or no striking benefit was observed as regards the cardiac irregularity and weakness, while in three cardiac cases progressive improvement occurred while the drug was being administered. In two cases marked improvement occurred after strophanthus was administered, while previously no special improvement was observed, three cardiac tonics having been already tried without avail in one case and two in the other.

Dr. A. A. Smith also stated that strophanthus had been used in the wards of Bellevue Hospital. In two cases of pulmonary œdema it was administered with good results. The first was a case of mitral systolic and double aortic lesion in which pulmonary œdema developed after unusual exertion. Five minims of the tincture were given every four hours, and the patient recovered. He also reported a case of pulmonary œdema occurring in pneumonia, and a case of emphysema, in which this drug appeared to produce excellent results.

Dr. Beverley Robinson at the same meeting read notes of twelve cases in which strophanthus was used with success, even in some instances after other cardiac tonics had failed to produce any result, though perhaps it is worthy of note that often the mere change from one cardiac tonic to another will increase the quantity of urine for a day or two, or more.

In this connection it is worthy of note that two enterprising English drug firms expect to become millionnaires at the expense of the public through the sale of this drug. We learn that these firms claim to have "cornered" the market in strophanthus, and have so advanced

its price as to make at present, in view of the uncertainty of its action, any ordering of the new heart-tonic in physicians' prescriptions entirely unwarranted. The present market price of the tincture of strophanthus—and it is to be noted that no definite strength is announced—is one dollar per ounce. Now, even if we admit that this tincture is made from the clear seeds and in the proportion first recommended by Prof. Fraser,—*i.e.*, one pound of seeds to eight pints of spirit,—that would bring the price of the seeds to one hundred and twenty-eight dollars per pound. We further learn that the English firms which are thus attempting to fleece the general public are offering the clear seed at one hundred and sixty shillings (forty dollars) per pound; and recollecting that the manufacturers of the tincture do not state that this tincture is made from the seeds alone, and that Dr. Fraser has more recently recommended a much more dilute tincture, it is evident that the profit made in this transaction must be simply enormous, provided the medical profession can be gulled into playing into the hands of such extortioners.

It is highly probable that this drug may prove to be a valuable adjuvant to our other means of treating a weak heart; but neither we nor our patients are compelled to rely on it alone, and until the manufacturing druggists learn that the medical profession cannot be played as puppets to fill their pockets, Strophanthus Hispidus should be let severely alone.

PILOCARPINE AS A GALACTAGOGUE.

TO a philosophical lover of his race few things are more disheartening or more saddening than a puling, whining, emaciated shadow of a baby dragging a fraudulent food from a no less fraudulent teat encasing the yawning mouth of the flinty bottle. Cheated in the very beginning of his life, the unfortunate being draws in, but not with his mother's milk, his first lessons of fraud. This disheartening spectacle is almost universal among the upper classes of Americans. In the race for civilization and culture the lacteal glands seem to have been left entirely behind. Any one, therefore, who would discover a medicinal or other method of bringing about an Eve-like development to our American women would confer a great boon upon the rising humanity, though he might incur the anathemas of the numerous manufacturers who batten upon the sufferings of the young and the deficiencies of the old. Castor oil leaves, faradization, ale, milk, and the various remedial measures employed by the laity and the profession to remedy the great and growing evil have in the past amounted to nothing. We therefore, with not altogether untempered hopefulness, call the attention of our readers to the investigations of M. Chéron, who has studied the action of pilocarpine upon the mammary glands, and believes that he has found in it a specific. The treatment has been practised by him in nine cases with satisfactory results in all but one. Five centigrammes of the nitrate of pilocarpine were hypodermically injected as soon as the milk became scanty, whether this took place suddenly or by degrees. The injection was repeated every day. Under its influence the skin of the face and, afterwards, that of the body became hot for a few moments, but there was seldom any moisture. It is essential to success not to produce diaphoresis. If the scantiness of secretion has existed for some time, ten or twelve injections are required; on the other hand, if it has come on suddenly, two or three will suffice. The treatment had no ill effect either on the nurse or the nursling.

A NEW LOCAL ANÆSTHETIC.

IT is well known in Southern Australia that a great many sheep and cattle are annually killed by eating Euphorbia Drummondii, which is very poisonous, according to the quantity of milky juice which it contains. It appears from the statement of Dr. Schomborgh that sheep, bullocks, and horses die in from twenty-four hours to seven days after eating it. They present paralysis of the extremities, hanging of the head as if tipsy, while the body does not seem to be impaired. At first the weed is avoided, and taken only on account of extreme hunger, but afterwards it is sought after and eaten with great avidity.

Dr. John Reid, of Germein, announces in the *Australasian Medical Gazette*, No. 61, 1886, the discovery of an anæsthetic alkaloid in this plant, which he terms drumine. The method which he employs for the isolation of this alkaloid is to make a tincture, which, after standing for a few days, is evaporated to get rid of the spirit, ammonia added in excess, and the solution filtered. The residue, after the ammoniacal odor has disappeared, is dissolved in diluted hydrochloric acid, and the filtrate is filtered through animal charcoal to

destroy the abundant coloring-matter. The filtrate is evaporated slowly, and leaves the alkaloid. This alkaloid deposits from solutions in acicular and stellate crystals with little taste, freely soluble in chloroform and water. The crystals deposited from the hydrochloric acid solution and filtered through animal charcoal are circular or boat-shaped at the circumference, and stellate, or perhaps more correctly, disks, as if formed of concentric circles, with radiating fissures. They are colorless, and under a high power of the microscope the acicular crystals are in some cases rhomboid in shape. Dr. Reid thinks that perhaps this difference in shape, and the different degrees of solubility of these different-shaped crystals in chloroform, would perhaps indicate that two alkaloids are present, but his researches have not yet enabled him to speak positively on this point.

Experimenting on cats, Dr. Reid found that on placing a few drops of a four per cent. watery solution of this alkaloid in one of the eyes, in a few moments it was tolerant of contact with the finger, while the pupil was not appreciably dilated. In another instance he injected 3 grains subcutaneously in the back, and, apart from anæsthesia, with the production of no apparent action. The following day he states that he gave a large dose to the same animal, but does not name the quantity, and in a few moments the legs were completely paralyzed, while breathing was slow and performed with difficulty. As the animal was apparently dying, strychnine was injected, and produced only a few fibrillary twitchings of the face-muscles, but no general convulsion, and death soon followed. Dr. Reid also experimented with this drug upon himself, trying it upon his tongue, nostrils, and hand, and found very marked anæsthesia in all cases, even the sense of taste and the bitterness of quinine being abolished on the side of the tongue to which it was applied. Taken internally, he found that small doses, although he does not say in what quantities it was administered, produced no constitutional effects. In a case of sciatica in an old man, a subcutaneous injection of 4 minims of a four per cent. solution relieved the pain. He also employed it in a case of catarrhal jaundice, relieving the pain and tenderness in the stomach, and in neuralgic tic it has produced successful results by dropping it in the eye.

It is to be regretted that Dr. Reid's experiments are so crude, and show such entire ignorance of the commonest methods of pharmacological investigation, as to give no reliable conception as to what is the action of this alkaloid. It is to be hoped that the plant will be subjected to a renewed analysis that Dr. Reid's statements may be confirmed or disproved, and that the alkaloid, if such be present, be subjected to thorough physiological and clinical examination.

WE welcome to our exchange table the new journal of *Laryngology and Rhinology*, which is to be edited by Drs. Morell Mackenzie and B. Norris Wolfenden, and published monthly by the Churchills, of London, and P. Blakiston, Son & Co., of Philadelphia. We should suppose that the journal would be an absolute necessity to all those who treat diseases of the throat and nose. It is chiefly composed of abstracts from the world's recent literature, and reports of the transactions of French, German, English, and American societies. To us it appears to thoroughly represent the current thought on the subject.

Reports on Therapeutic Progress.

THE ANTISEPTIC TREATMENT OF SUMMER DIARRHŒA.

At the annual meeting of the New York Academy of Medicine, held January 6, 1887, DR. L. EMMETT HOLT read a paper on the "Antiseptic Treatment of Summer Diarrhœa" (*Medical Record*, January 15, 1887). The speaker stated that he did not undervalue other methods of treatment than the use of drugs, such as careful feeding, change of air, etc., but the object of the paper was to discuss what additional measures were useful.

All the causes of summer diarrhœa—excessive heat, improper or artificial feeding, and bad hygienic surroundings—united to produce a dyspeptic condition, which was really at the bottom of nearly all of these cases. The age showed it could not be heat alone, for the disease was not frequent at the most tender age,—under six months. Of 431 cases, only twelve per cent. were under six months, while fifty-nine per cent. were between six months and two years. The explanation was that under six months most of the children were fed at the breast. Improper and artificial feeding was quite as important as heat, as Hope had found in 591 fatal cases that only 28 had no food but the breast.

Heat depressed vital energy, increased de-

composition in the streets and sewers, and thus vitiated the atmosphere; but, most of all, it produced in the food given to young children putrefactive changes before it was taken into the stomach.

This was especially likely to occur with milk. One instance was cited of every one of twenty-three healthy children being taken in one day with diarrhœa from bad milk.

Closely related to this subject were the poisons produced from food, or ptomaines. Brunton had stated that most of the alkaloids produced from the decomposition of albumen caused diarrhœa. It was believed that many of the nervous symptoms in summer diarrhœa had their explanation in the effects of these alkaloids. This was true especially where the discharges were abruptly arrested, either spontaneously or by opium. They were to be looked upon as a form of toxæmia.

The inflammatory changes found in the intestine were to be looked upon as a consequence of the diarrhœa rather than the cause of it. The most marked lesions were always found in the cæcum and sigmoid flexure, just where the irritating substances were longest detained in their passage.

Immense numbers of bacteria were found in the discharges, but no sufficient evidence had yet been adduced to establish the existence of a special microbe as a causative agent.

The indications for treatment were four: 1. To clear out the bowels. 2. To stop decomposition. 3. To restore healthy action in the alimentary tract. 4. To treat the consequential lesions.

It was proper to begin with a cathartic in all cases unless the stomach was very irritable. Castor oil was by far the best. If much vomiting were present, a copious injection of water, enough to wash out the colon, should be given.

Many mild cases could be cured by the oil alone, provided suitable dietetic regulations afterwards could be carried out. In severe ones it gave only temporary benefit.

For the second and third indications an antiseptic should be given and the diet carefully regulated. The best antiseptics were sodium salicylate and naphthalin. The former should be given in doses of 1 to 3 grains, according to the age of the child, every two hours, and the latter in about double the dose.

If vomiting were present, all food should be stopped for from twelve to twenty-four hours, and thirst quenched by thin barley-gruel or mineral-waters,—cold, and in small quantities.

Unless the child were upon the breast, in which case it should, of course, be kept there, it was better to *withhold milk entirely*. Wine-whey, animal broths, expressed beef-juice, or even raw beef, could be used, and were usually sufficient.

To meet the fourth indication—*i.e.*, to treat the lesions—astringents by the mouth were useless, with the possible exception of bismuth. The diet should be as carefully looked to in chronic cases as in acute. The antiseptic should be continued, to check fermentation and decomposition in the intestine, and the large intestine should be washed out once a day with pure water or a weak antiseptic or astringent solution.

Attention was called to the fact that, except opium, nearly all the drugs which had held their place in the treatment of this disease were antiseptics of more or less power. Bismuth, calomel, the mineral acids, iron and silver salts were cited. Pure antiseptics had been used in the treatment of diarrhœal diseases since 1846. Creasote was first employed, and with great success both in England and in this country. Ten or fifteen years ago salicin was largely used, especially in the South, with uniformly good results, particularly in chronic cases. The use of salicylic acid and its salts, the bichloride of mercury, and naphthalin was also referred to. The last was of latest introduction, and seemed likely to prove of very great value, perhaps the most valuable of all.

Notwithstanding the successful results obtained by antiseptics, the great majority of the text-books still advocated the old plan of the use of opium and astringents as fifty years ago. An inquiry into the public practice of this city showed that in fourteen institutions and dispensaries, where it was estimated that twenty-five thousand children were treated yearly for diarrhœal diseases, the main reliance was still upon opium, bismuth, chalk mixture, and castor oil.

The speaker had tabulated 300 cases of his own treated by such remedies. Of these, 50 per cent. were cured; 27 per cent. improved; 18 per cent. unimproved; and 7 per cent. died. During the past year he had treated 81 similar cases by an initial dose of castor oil, followed by salicylate of sodium, these being the only drugs used. Of these, 84 per cent. were cured; 7 per cent. improved; 7 per cent. unimproved; 1.2 per cent. died. Forty-four cases were treated by naphthalin,

usually preceded by the oil. Of these, 67 per cent. were cured; 15 per cent. improved; 13 per cent. unimproved; and 2 per cent. died. Resorcin was used in a similar manner in 27 cases. Of these, 55 per cent. were cured; 22 per cent. improved; 22 per cent. unimproved; and none died.

The duration of the disease in these cases before treatment was about the same in each class. The duration of treatment in the cured cases was much shorter by sodium salicylate than by the use of opium, astringents, etc. In cases of long standing the very great superiority of the salicylate and naphthalin was clearly shown. Resorcin was much inferior to the drugs just mentioned.

The following conclusions were drawn from the paper:

First.—Summer diarrhœa is not to be regarded as a disease depending upon a single morbific agent.

Second.—The remote causes are many,—heat, improper and artificial feeding, bad hygiene, etc.

Third.—The immediate cause is the putrefactive changes which take place in the stomach and bowels in food not digested, which changes often are begun outside the body.

Fourth.—These products may act as systemic poisons, or the particles may cause local irritation and inflammation of the intestine.

Fifth.—The routine use of opium and astringents is not only useless, but, especially at the outset, may do positive harm; since, by checking peristalsis, opium stops elimination and increases decomposition.

Sixth.—Evacuants are to be considered an essential part of the antiseptic treatment.

Seventh.—The salts of salicylic acid and naphthalin are the antiseptics which, thus far, seem to be best adapted to the treatment of diarrhœal diseases.

Dr. R. W. Wilcox spoke especially with reference to the use of naphthalin in diarrhœa in adults. Since reading Rossbach's paper in the *Berliner Klinische Wochenschrift*, in November, 1884, he had used naphthalin in thirty-two cases, nearly all being in adults. He had come to feel as much confidence in the use of this drug, under certain circumstances, as in the use of mercury or the iodides in syphilis or of quinine in intermittent fever. As mercury and quinine may fail to accomplish their work if used without observance of a few well-known precautions, so naphthalin may fail if improperly employed. The most frequent cause of failure has been the use of too small quantities, less than 60 grains daily being a needless waste of a very good medicine. He had given up to 120 grains during the twenty-four hours in divided doses, usually in starch capsules with a small quantity of oil of bergamot to conceal the somewhat unpleasant odor. If the impurities of the drug are removed by washing with alcohol, no such untoward effects as have been occasionally reported in the journals will occur. Frequently during its administration the urine will assume a smoky color, resembling that of acute nephritis, but a careful examination will fail to detect either albumen or casts.

In chronic diarrhœas he had used naphthalin as the only drug in twenty-one cases. Nearly all degrees and varieties had been represented; some could be traced back to an acute process, others were the result of improper food or followed debilitating diseases.

He related one case: James D., messenger, 18 years of age, came to him, complaining of a diarrhœa of over two years' duration. Its commencement was in the second summer previous to his first visit. The assigned cause was overindulgence in unripe or spoiled fruit. The trouble had continued through the following winter, with intervals of cessation, and had been aggravated the following summer. Since summer his loss of flesh, previously considerable, had increased, his tongue was heavily coated, the appetite poor; his discharges were five to six daily, unformed, varying much in amount, sometimes watery, very foul-smelling, much gas, no tenesmus, no blood; pain at times, but no fever. Although he was in a deplorable condition, and so long as his work remained severe and his food unsuitable recovery seemed impossible, by the use of 60 grains of naphthalin daily the number of movements were reduced, within a week, to two daily, and, for the first time, became formed and devoid of odor. About six months afterwards he reported that after three weeks he had discontinued his medicine, having had no further necessity for using it.

In *chronic dysentery* he had used naphthalin in seven cases, with excellent results. The most interesting case was that of James C., 66 years of age, who contracted dysentery while serving in the Federal army in 1862–64. He had never been free from the disease except for a few weeks at intervals. He could remember no day during which he had not had more than one passage. He was ema-

ciated, with sallow, dirty skin, marked tenesmus, abdomen painful on pressure, red tongue, pulse very feeble, no appetite. His stools averaged seven movements daily,—slimy, blood-stained, of extremely foul odor. This man had 90 grains of naphthalin daily, and at the end of the month he would have hardly been recognized as the same man. Four months after he reported himself so much improved that he considered himself a well man.

His experience in the diarrhœa of *typhoid fever* had been limited to two cases: Charles B., 25 years of age, and John F., 16 years of age, both of whom he saw for the first time in the third week, the diagnosis being thoroughly established. In both there was commencing tympanites; diarrhœa, to the extent of six to ten passages in the twenty-four hours. Naphthalin was administered up to 60 and 90 grains in the day, with the result of "stiffening up" the motions and reducing them to two daily. The odor of the stools, in both cases, was lost. In fact, he felt so confident that the intestinal canal and, consequently, the fæces were disinfected that he did not take any other precautions. He also directed attention to the antipyretic effect of this drug. In general, the use of antipyretics in typhoid fever he considers unsafe; but if the practitioner was thoroughly imbued with the idea that he must use an antipyretic, let him use naphthalin, which reduces temperature, indirectly, by disinfection of the intestine. In point of safety it compared favorably with such drugs as antifebrin, thallin, antipyrin, etc. Whether typhoid fever had ever been aborted by this or any other drug he did not pretend to say; but if it could be accomplished, in his opinion, naphthalin, by its vigorous action upon the contents of the alimentary canal, should tend to that result.

Of the use of naphthalin in acute intestinal catarrhs, and in the diarrhœas of children, he had had no experience. In the diarrhœa of chronic tuberculosis he had had no opportunities for experiment. In all his cases of diarrhœa evidences of tuberculosis in other organs were sought for, but were not found. He would emphasize the claims of naphthalin as *the* drug to use in all cases in which it was necessary to disinfect the alimentary canal, as in typhoid fever, intestinal catarrhs, and dysentery, because it seems to be, of all the drugs at our disposal, the most certain, and at the same time the one most free from danger.

THE MEDICATION OF PHTHISIS.

In a recent number of the *Progrès Médicale* the editor discusses the changes in the treatment of phthisis which modern pathological researches would indicate. Recent suggestions in antibacilli treatment are the inhalation of hydrofluoric acid and the rectal injection of sulphurous gas.

We are able, however, to hope for very little from these methods.

The means for combating tuberculosis which seems most worthy of serious attention is the use of iodoform.

This substance has been tested by injection in cold abscesses, by inunction in tubercular meningitis, and internally given in enlarged glands and pulmonary tuberculosis. The purity in which iodoform is now made, our better knowledge of its solubility, and its poisonous properties, enable us to use it as a most important agent in the extirpation of a local tuberculosis before the organism can become affected; it has thus an important part in preventive and hygienic medication.

We must agree with Jaccoud in placing the administration of nutritious elements as still our most important duty to the phthisical patient. Cod-liver oil, to the extent of 4 ounces daily, is of the greatest benefit, and especially those oils which contain iodine and phosphorus in greatest amount.

AN IMPROVED METHOD FOR COMPRESSING AIR.

Dr. E. L. Oatman, of Nyack, N. Y., sends to the *N. Y. Medical Record* (December 25, 1886) an account of a simple and apparently very effective method of compressing air for use in atomizing fluids. In the cellar or basement a common galvanized iron range-boiler is placed, and connected by two pipes, entering it below, with the main water-supply and with the drain. At the upper end a tube is attached, which passes up to the physician's office. All the pipes are fitted with stop-cocks. To charge the reservoir, this air-tube and the discharge-pipe are closed, while the supply-pipe is opened. The water now rushes in, and places the contained air under a high pressure. When the water ceases to flow, the supply-pipe should be closed. The compressed air may now be used when required by opening the air-pipe, the stop-cock of which is placed in the office. When the pressure is exhausted, the reservoir may be emptied by opening both the air-tube and the discharge-

pipe, and the air may then be again compressed as before, by closing the latter pipes and opening the supply-pipe. The discharge-pipe should be of large calibre, say two inches, so that the apparatus may be quickly emptied. The arrangement would be improved, Dr. Oatman writes, by using two connecting reservoirs, allowing the water to enter only the first, which should be the larger of the two, thus compressing the air in the second, where it can be kept ready for use. The water may now be discharged from the first, for which purpose it should be provided with a second air-tube, leaving it ready for instant use when the pressure is exhausted in the second reservoir. All the cocks governing the tubes of the apparatus may be placed in the office, if desired. Ten dollars will cover the entire cost of the apparatus.

RECENT RESEARCHES IN DIURETICS.

To what extent the Malpighian corpuscles and the renal tubules respectively take part in the secretion of urine is not yet accurately known, although the researches of Heidenhain, Nussbaum, and others have added much to our knowledge. It seems likely that an investigation into the mode of action of diuretics will throw great light on the question, because a diuretic drug may act either on the Malpighian corpuscles, increasing the flow of urinary water, or on the renal tubules, increasing the amount of urinary solids, or on both structures. The great difficulty, however, in experiments on the kidney in living animals, is that of estimating how much of the effect produced by a drug is due to changes in the circulation, or in the nervous system, which has an influence on the secretory activity of the kidney, as well as on the blood-vessels. MUNK has, in his recent experiments, eliminated these factors by investigating the action of diuretic drugs on an excised kidney. The organ, after excision, was nourished, under a pressure of one hundred to one hundred and ninety millimetres of mercury, by a stream of blood and salt solution through the renal artery. The drug was added to the liquid, and its effect noted by the amount and quality of the urine, collected through a canula placed in the ureter. Before the addition of any drug, it was found that the amount of urine secreted in an hour varied from four to twenty-four cubic centimetres; that this was a true secretion, and not a simple diffusion, was shown by the fact that it contained a greater proportion of saline constituents than the circulating fluid. The addition of chloride of sodium, nitrate of sodium or potassium, caffeine, dextrose, cane-sugar, or glycerin to the circulating fluid, increased the secretion of urine three to fifteen times, the pressure remaining the same; while in the case of nitrate of potassium and of caffeine, there was an increased rapidity of flow of the circulating fluid. Diuresis of this nature and under such conditions could only result, according to Munk, from a stimulation of the secretory cells of the kidney by the drug, a conclusion which, as regards caffeine, had already been arrived at by Von Schroeder. An interesting result obtained by Munk was the appearance of hippuric acid in the secretion from the kidney, when benzoate of sodium and glycocol were added to the fluid circulating through the vessels of the kidney. As is well known, benzoic acid given to any animal appears as hippuric acid in the urine; and this result has been supposed to be due to the action of the intact blood-corpuscles. But, in Munk's experiment, these were absent; hence he concludes that the transformation is probably brought about by the oxygen which is combined with the hæmoglobin.—*British Med. Journal*, December 11, 1886.

ELIMINATION OF POISONS.

A study of the means by which nature rids the economy of what is harmful has been made by SANQUIRICO, of Siena, and his experiments and conclusions are as follows:

He finds that the vessels of the body, without undergoing extensive structural alteration, can by exosmosis rid themselves of fluid to an amount eight per cent. of the body weight of the subject of the experiment.

Through the injection of neutral fluids a great increase in the vascular tension is effected, which is relieved by elimination through the kidneys.

With reference to this fact, the author, in 1885, made experiments with alcohol and strychnine, and continued his researches in the use of chloral and aconitine with results favorable to the method employed, which is as follows:

The minimal fatal dose of a given poison was selected, and found to be in a certain relation to the body weight.

Immediately upon the injection of the poison a solution of sodium chloride, .75 per cent. in strength, was injected into the subcutaneous tissues of the neck, in quantities

being eight per cent. of the body weight of the animal.

In the case of those poisons whose effect is not instantaneous, the injection of saline solution was made on the first appearance of toxic symptoms; in other poisons the injection was made at once.

The result of the use of salines was a diuresis varying in the promptness of its appearance and in its amount.

Those animals in which diuresis was limited at first and then increased generally recovered, while those in which diuresis was not established perished; the poison used was found in the urine of those which died and also those which recovered.

The author succeeded in rescuing animals poisoned by alcohol, strychnine, chloral, and aconitine; with morphine, curare, and hypnone the method of elimination failed, although ten per cent. in quantity of the body weight of the animal was used in the saline injection. With aconitine diuresis was not always established, and when it failed the animal died in convulsions.—*Centralblatt für die Medicinischen Wissenschaften*, December 18, 1886.

ACETANILIDE—A NEW APYRETIC.

A substance known to chemists who work with dyes by the name of acetanilide, which is produced by the action of heat on acetate of aniline, and is contained in rosaniline made with acetic acid and iron, has recently been found by two German observers, Drs. Cahn and Hepp, working in Professor Kussmaul's clinic, to possess powerful febrifuge or apyretic properties. They have given it the trivial name "antifebrin." It appears to have, weight for weight, about four times the power of lowering the temperature of fever-patients that antipyrin has. The doses given varied from 0.25 gramme to 1 gramme, as much as 2 grammes (½ drachm) being given during the twenty-four hours. In every case in which Drs. Cahn and Hepp gave the drug, it produced more or less reduction of temperature; sometimes the thermometer registered a normal temperature for some hours together, and in these cases the appetite often returned. The action of the antifebrin was accompanied by a certain amount of perspiration and with some redness of the skin, sometimes also by thirst and an increase in the urinary secretion. Occasionally a dark tint was observed in the skin of the feet and hands, but no serious symptom was observed in any of the twenty-four cases in which it was given. The price of the acetanilide is not high, being about a shilling an ounce. It can be administered conveniently in wine.—*British Medical Journal*, December 4, 1886.

INTESTINAL IRRIGATION IN CATARRHAL ICTERUS IN CHILDREN.

Monti, in his clinic for children's diseases, has extensively employed the treatment of jaundice from icterus catarrhalis by cold-water enemata.

This treatment is well borne by children over three years old, and the water is used at a temperature varying from 50° to 60° F., and in quantities from one to two quarts. The presence of diarrhœa is not a contraindication. In the larger number of cases four or five irrigations were sufficient to effect a cure; in one case only were eleven needed. The dyspeptic symptoms, clay-colored stools, and engorgement of the liver were promptly relieved by two or three irrigations. Löwenthal, of Berlin, reports good results from this method in forty-one cases.—*Medicinisch-Chirurgische Rundschau*, December 15, 1886.

THALLIN IN TYPHOID FEVER.

The introduction of such drugs as kairin, antipyrin, and antifebrin has somewhat diverted attention from a very powerful antipyretic agent,—viz., thallin. Prof. Ehrlich lately presented to the Clinical Society of Berlin the results of some researches he has been making with this last-named agent, especially in the treatment of typhoid fever (*Münch. Med. Woch.*, No. 47). From experiment, he had found that after administering the drug to animals it was not retained in the nerve-centres, but mostly in the fatty tissue of the body. He also found that there was a marked difference in toxic action, according as to whether it was administered by the mouth or subcutaneously, the greater inertness of its effect in the former case being attributable to the hindrance to absorption from the presence of intestinal contents. The lesions induced by a toxic dose comprised fatty degeneration of the kidneys, necrosis of the salivary glands and pancreas, and hemorrhagic infarcts in the renal pyramids. The chief action of thallin is antipyretic, but it is capable also of moderating inflammation. As regards typhoid fever, it was administered by Ehrlich in two different ways. The first plan consisted in commencing with doses of 0.06

gramme every hour, and reducing the dose to the minimum required to give any effect. The other plan was to commence with a minimum dose, and increase it until an effect was produced, and then to continue the prescription at the dose thus attained. The action of thallin is especially noticeable in its effect on the sensorium and general condition of the patient, who presents the appearance of convalescence, whilst the splenic swelling and roseola are still present; and if the drug be discontinued the temperature will rise again. It is not therefore surprising to learn that, whereas of twenty-eight cases treated by bathing the average stay in hospital was thirty-seven days, of seven cases treated by thallin (minimum doses) the duration of treatment was forty-seven days, and cases on a scale of progressive doses thirty-eight days. However, Professor Ehrlich claims advantages for the drug in the absolute control it exerts over the pyrexia, and the sense of well-being enjoyed by the patient. There were no intestinal hemorrhages in these cases, and no instance of perforation. The kidneys were not affected, but sequelæ in the form of hyperæmia and œdematous swellings seemed due to the use of the drug. It was not thought that thallin had any specific action against the typhoid bacillus, but it did seem to limit the degree of intestinal ulceration. Professor Ehrlich considers it to be on a level with the bath treatment. Dr. Fränkel pointed out that if the statement were correct that thallin is not found in the nerve-centres its action in reducing temperature was rather inexplicable. He had exhibited it in increasing doses; but could not say that the patients experienced any special benefit attributable to the diminished fever. Dr. Guttmann had not been favorably impressed by its use, and had noted the production of rigors.—*The Lancet*, December 25, 1886.

THE EFFECT AND ELIMINATION OF BORAX AND BORACIC ACID.

The extensive use of borax and its compounds as antiseptics has given especial interest to the question of the poisonous effects and mode of elimination of this drug. JOHNSON, of Stockholm, has made clinical studies upon this subject by introducing borax and its compounds into the stomachs of patients in the Caroline Institute, and has tested for borax by the curcuma test, which, in proportions of 1 to 2000, gave well-marked reaction, and also by the spectro-electric tube of Vigier, which detects only the proportion of 1 to 1000. In twelve cases in which the dosage ranged from 20 grains to 50 grains daily in irregular doses, after the largest doses had been taken, three exhibited signs of intoxication, headache, vomiting, malaise; in one case, after the use of borax for ten days, a slight acceleration in the pulse-rate was observed, accompanied by increase of temperature, loss of appetite, headache, redness of the fauces, and bronchial catarrh, and finally by a well-marked papular erythema upon the thighs and joints. The urine commonly gave a reaction for borax ten minutes after the dose was taken: it was not found in two days after the drug had been used by inunction. In other cases it persisted in the urine six, eight, and fourteen days after the patient took it. Boracic acid had a distinctly diuretic effect: albumen disappeared from the morning urine in some cases where albuminuria existed; when the greatest diuresis was produced, the drug itself disappeared from the urine. Borax was found in the perspiration; in small amounts in saliva; irregularly in fæces, often after several days' ingestion, which the author thought due to its presence in the bile. Twice borax was found in ascitic fluid.

It is interesting to observe that after foot-baths containing boracic acid borax was found in the urine, and also after the application of vaseline containing boracic acid to an ulcer it was present for two days after its use. Its presence in the organism after its use with hot-water applications is probably owing in part to the influence of the steam which is present. Johnson's observations do not tend to show the danger of the use of borax and its compounds, but to call attention to the fact that after its use in the stomach, intestine, bladder, and pleural cavities ill effects have followed a five per cent. solution, and the observer advises that after the use of solutions of a strength of two per cent. or over, care be taken that no great amount of the fluid remain in the body, and that after-injections of water or neutral carbonates be made as a prophylactic measure.—*Medicinisch-Chirurgische Rundschau*, December 15, 1886.

CHLORIDE OF METHYL IN THE TREATMENT OF NEURALGIC AFFECTIONS.

From an experimental paper with the above title, published in the *Kansas City Medical Index* (December, 1886), DR. DUDLEY TAIT draws the following conclusions:

1. Chloride of methyl spray may be used

with great advantage in all neuralgic affections; its sole indication is pain.

2. It can be successfully resorted to in view of eradicating pain in the course of various pulmonary affections, in acute and chronic rheumatism, and also in affections similar to writer's cramp, etc.

3. In trifacial neuralgia, precaution is of absolute necessity, but does not constitute a counter-indication.

4. One application often suffices; however, two and exceptionally several applications are necessary.

5. The majority of neuralgic affections are definitely cured by this treatment; success has sometimes been obtained in neuralgias symptomatic of Pott's disease, pelvic tumors, etc.

6. The slight and *transient* pigmentation that sometimes follows this treatment is of no importance; it disappears in the space of two weeks.

7. Experiments seem to indicate that the analgesic properties of chloride of methyl are due to its action on the superficial terminal expansions of the nerves of the skin.

TREATMENT OF SYPHILIS BY SUBCUTANEOUS INJECTIONS OF CALOMEL.

BALZER has treated syphilis by the above method, employing the following combination:

Calomel, gr. viii;
Oil of vaseline, ʒiiss.

The first case in which this treatment was employed was that of a patient who had roseola and mucous patches upon the vulvæ, which had resisted all other modes of treatment. The first injection made contained ⅓ of a grain of calomel, the second injection contained 1 grain.

A vigorous inflammation occurred at the place of injection, but without suppuration. Eight days after hypodermic medication began, the unpleasant symptoms which had so long annoyed the patient disappeared.

The author has treated five other patients similarly, and with excellent results.

Two hours after injection traces of calomel are found in the urine.

Scarenzio and Smirnoff have treated secondary syphilis with 8 grains of calomel in four doses, and at intervals of twenty days. They claim good results, without returns of the disease.

The use of the oil of vaseline as a vehicle greatly diminishes the tendency to form abscesses after hypodermic injection.—*La Presse Médicale*, December 5, 1886.

THE INFLUENCE OF COCAINE ON THE ACTION OF ESERINE ON THE EYE.

It was remarked by Wecker in the *Annales d'Oculistique* (1884, t. xcii. p. 218) that the action of eserine on a cocainized eye is greater than when no cocaine had been used. This difference he attempted to explain by suggesting that the slight cocaine-anæsthesia of the iris and ciliary body may cause a somewhat similar effect on the pupil to that of eserine. DR. E. L. TUREVICH, however, who has recently published a "preliminary communication" on this subject in the *Vrach*, points out that the action of cocaine by itself on the pupil and accommodation is exactly the reverse of that due to eserine, cocaine dilating the pupil and paralyzing the accommodation, while eserine contracts the pupil and causes spasm of the accommodation; besides, it has been conclusively shown that a combination of atropine and cocaine produces a more powerful dilating effect on the pupil than atropine alone; and Ad. Weber has even given the equivalents of eserine and pilocarpine as antagonists of cocaine, these being 1 to 25–30 in the case of eserine, and 1 to 4 in the case of pilocarpine. The fact of eserine acting more powerfully on a cocainized eye is therefore paradoxical, and by no means easy to explain. How, writes Dr. Turevich, can the anæsthesia of the ciliary body, even if cocaine does produce such an effect, which is extremely doubtful, favor the action of eserine, as Wecker suggested? We should *a priori* expect that the contraction of the pupil by eserine in a cocainized eye would be, if anything, less than in an ordinary eye; and indeed it was shown by Weber that when a drop of a two per cent. solution of eserine was combined with 25 to 30 drops of a similar solution of cocaine, its effect on the pupil was entirely masked. In the hope of clearing up the paradox, Dr. Turevich undertook a series of observations on the paralyzing effects of eserine and pilocarpine on his own eyes and on those of others, both with and without the previous instillation of cocaine. The course of the accommodation-spasm was observed by measuring the refractive power of the eye every five minutes from the application of the eserine or pilo-

carpine to the time when the effects had passed off. Fifteen comparative observations were made, which completely confirmed Wecker's statement as to the greater effect of eserine on a cocainized eye, showing also that the same is true of pilocarpine. The explanation suggested of the apparently opposite action of cocaine when applied previously to the eserine and when combined with it is that when anæsthesia of the conjunctival sac is present,—first, the surface absorbs more of the eserine than when the eye is as sensitive as usual, the introduction of a foreign liquid causing less winking with less consequent expression of the liquid between the lids; secondly, the secretion of mucus is smaller, and thus the solution is less diluted and less likely to be washed away; and thirdly, the conjunctiva and cornea are drier, and thus absorb the eserine more readily. The author convinced himself by special experiments of the difference in the behavior of cocaine according as it was applied before or simultaneously with the eserine or pilocarpine, and the above explanation is the only one which appears to him adequate to explain the apparent paradox.—*The Lancet*, January 8, 1887.

URETHAN IN THE TREATMENT OF MENTAL DISEASES.

Otto and König have given this drug in various cases of mental disease, with the following results:

In a case of great excitability in a woman who had been paralyzed, urethan was given in doses from 1 drachm to 2 drachms without any apparent effect. Larger doses produced very unpleasant after-effects in gastric symptoms. In excitability of idiotic children it was given with good effect; in children from 4 to 10 years old the doses ranged from 8 to 16 grains in the younger, from 20 to 40 grains in the older.

In the treatment of men who had been paralyzed its use was quite without effect.

König concludes that paraldehyde in such cases is much better; in large doses it also produces gastric disturbance, and when used for a long time cerebral impairment.

Rottentiller, in Budapest, has had much better results from the subcutaneous use of urethan with from one to three injections of one-fourth syringeful of a thirty per cent. solution. A restful sleep of six or eight hours followed, and the injection was unattended by unpleasant after-effects locally.

The experiences of the writers did not lead them to expect any well-defined and practical effect from the use of urethan.—*Zeitschrift Apotheker-Vereins*, No. 33.

THE TREATMENT OF CERTAIN FORMS OF VOMITING.

There are few disorders which cause more discomfort and distress than those accompanied with incessant attacks of vomiting; there are few disorders which try more the patience and the skill of the practitioner. Dr. F. P. Atkinson gives us in the *Practitioner* (for November, 1886) a number of points which may prove useful in relieving certain forms of obstinate vomiting.

In cases of *simple bilious vomiting* he states that a mixture containing 15 minims of solution of potassium and 4 of laudanum administered every four hours acts like a charm, and he asserts that in no uncomplicated cases will there be any vomiting after two or three doses. For the *vomiting of pregnancy* he suggests a little milk and tea, with a small piece of bread and butter or biscuit, immediately before rising in the morning, and a biscuit or two at various intervals throughout the day, whenever there is a feeling of emptiness. In vomiting from *ulceration of the stomach* the great object is to give the stomach as much rest as possible. This may be accomplished by giving very small quantities of peptonized milk or koumiss at short intervals; thus a teaspoonful of the above may be mixed with cold water, and given every four hours. Dr. Atkinson further recommends that the body should be oiled night and morning to help nutrition, and covered with warm clothing to prevent cold. Later on, when the pain has almost subsided, various simple foods may be allowed. When the vomiting is very urgent, of course the stomach should be given entire rest, and peptonized meat enemata should be administered.

In the vomiting which occurs in *infants brought up by hand*, the most frequent cause is found in the inability to digest the casein of the milk. In such cases it is advisable to use one of the many peptonizing powders now on the market, or the following may be given: Two tablespoonfuls of whey, two tablespoonfuls of water, and one tablespoonful of cream; if there be some diarrhœa, a little meat juice may be given three or four times daily, while the body should be oiled night and morning.

THE ALCOHOLIZATION OF WINES.

In the session of the Academy of Medicine of France held November 30, 1886, the Academy discussed at length the question of the reinforcing of wines with alcohol, and, after a long controversy, arrived at the following conclusions:

1. The addition of pure alcohol to wines in quantities not exceeding two degrees may be allowed; but amounts greater than this cannot be tolerated.

2. Addition of alcohol is dangerous, not only because of the quantity and quality of poor alcohol used, but because it destroys confidence and perpetuates fraud.

3. Alcohols commonly called good increase considerably the injurious effects of brandy and liqueurs; alcohol added to these liquids should be absolutely pure.

4. The Academy called the attention of the authorities to the necessity of reducing the number of smaller warehouses for keeping and altering wines, and of putting in active operation laws against drunkenness.—*Bulletin de l'Académie de Médecine*, No. 48.

A NEW METHOD OF EXCISION OF THE KNEE.

At a recent meeting of the Medical Society of London, MR. HERBERT ALLINGHAM (*Lancet*, December 18, 1886) read a paper, and showed cases illustrating a new method of excision of the knee. The operation consists in making a vertical incision over the joint in front, beginning two or three inches above the patella, and prolonged over the patella down to the tubercle of the tibia. The knife splits right through the quadriceps tendon above the patella into the synovial pouch there. The soft tissues over the patella are divided to the bone, the knee-cap sawn through, dividing it into two lateral halves, then the ligamentum patellæ is also split down to the tubercle of the tibia. By this means the joint may be thoroughly exposed by drawing outwards each half of the patellæ and associated structures to its corresponding side of the joint. The two halves of the patella are wired when the operation is finished. He claimed the following advantages for the operation: 1. The attachments of the fascia lata, the lateral ligaments, and the prolongation of the vasti to the tibia and fibula are not divided, and consequently there is much more support to the joint during the healing process, and when the leg is well. 2. Above the patella the synovial pouches are well opened, and all the synovial membrane can be thoroughly removed. 3. Dislocation of the tibia backwards and tilting of the femur forwards, which commonly occur after the operation, are thus prevented. 4. The joint and the end of the bones can be thoroughly examined, which was not possible by the method of lateral incisions. 5. The undivided quadriceps is a strong antagonist to the hamstring muscles, and should the splint be left off the leg is much less likely to become bent. 6. Progression is greatly improved, the attachment of the quadriceps being neither divided nor the muscles shortened, as must necessarily take place when either the transverse H- or U-shaped operation is performed. 7. And, above all, as we hope after excision to obtain movements in the knee-joint, the chances, Mr. Allingham thought, of such a result being brought about will be greatly facilitated by the operation described. In future operations Mr. Allingham said he would remove thoroughly the whole synovial membrane, and only dig out with a gouge the diseased spots on the cartilage, and should not in any way interfere with any of the cartilage that looks healthy. If the crucial ligaments are not extremely diseased they should be left undivided. The joint should be kept at absolute rest until the wound has healed, when passive motion may be commenced.

TREATMENT OF BRIGHT'S DISEASE.

SEMMOLA, of Naples, in an article in the *Wiener Medizinische Blätter*, No. 49, advises strongly against allowing a patient who is suffering from nephritis to come in contact with cold in any avoidable way. Such patients are excessively sensitive to cold, and cold baths are followed by great shock and depression. Violent massage and exercise of the muscles the author also strongly deprecates as followed by great shock and weakness.

He would advise the patient to live in a dry and equable climate; to strictly avoid all exposure or going about in severe winter weather; to practise mild gymnastics in a comfortable room rather than venture into a temperature below 18° or 20° C. The author emphasizes the remarkable sensibility of the skin of the sufferer with Bright's disease to all variations of temperature. Sodium iodide and chloride is advised in doses as large as tolerated. When, after two or three weeks, albumen has not entirely disappeared and dropsy

has been relieved, phosphates of sodium or calcium are given in quantities as large as 40 grains or a drachm daily. The efficacy of these drugs the author believes consists in their power to promote the assimilation of albumen.

The methodical inhalation of oxygen, which Semmola has urged since 1867, has been repeatedly proved to be of the highest benefit. Albumen soon disappears after its use, and although casts may remain in the urine, the patient's general condition is so much improved that the author thinks we have here an argument for the dyscrasic or hæmatogenic origin of Bright's disease.

All astringents are considered not only valueless but also injurious. Especially is the action of ferrum sesquichloratum and plumbum aceticum thought injurious because of their astringent influence on the capillaries of the skin.

HYOSCINE AS A CEREBRAL SEDATIVE.

Dr. J. Mitchell Bruce, writing in the *Practitioner* (November, 1886), is able to confirm the statements already made as to the value of hyoscine as a cerebral sedative. His experience shows that there can be no doubt about the rapid and thoroughly complete effect which it possesses in quieting delirium. With the exception of this drug, our present sedatives are not sufficient to meet every case. The bromides, chloral, and morphine, which constitute the entire group of sedative drugs to which we have recourse with any feeling of confidence, will often fail us one after the other in urgent cases. The bromides have not the power, while chloral and morphine are dangerous in many cases, and dare not be given. In such cases Dr. Bruce believes that hyoscine will be thoroughly reliable, and that in cases of troublesome, noisy delirium there is no treatment at once so prompt, successful, and safe as a hypodermic injection of hyoscine. As might be expected, its use is not entirely unattended by some disadvantages. Thus, within half an hour after the administration of from $\frac{1}{100}$ to $\frac{1}{75}$ of a grain it may cause failure of respiration in the form of rapid, shallow breathing, or often Cheyne-Stokes rhythm. It has also been observed that cough has been noticed on the nights that hyoscine has been given in delirious cases. The pulse may become weak, the face livid, and the pupils dilated, the whole appearance of the patient being calculated to cause anxiety. There is not, however, a case on record in which death has been attributed to an overdose of this drug, and it is rarely necessary to give large doses, Dr. Bruce having found that the $\frac{1}{200}$ of a grain will often produce full effects. Again, hyoscine does not produce any dryness of the skin and throat, but occasioned, in Dr. Bruce's experience, distinct increase of perspiration, indicating some radical difference between the action of this alkaloid and other members of the atropaceous group.

COCAINE AS AN ANÆSTHETIC IN LABOR.

Fischel, of Prague, has used cocaine in six cases of labor, with two negative, one fully successful, and three partly successful results. He regards it as an adjuvant to chloroform. Cocaine is useful only in annulling pain caused by the tension upon the maternal tissues. Fischel proposes to apply a four or five per cent. solution through a speculum to the tense and dry tissues. When abundant liquor amnii has escaped, the powdered drug, mixed with an accompanying neutral powder, is advised.—*Wiener Med. Wochenschrift*, December 11, 1886.

NASAL TREATMENT OF WHOOPING-COUGH.

A definite idea has of late gained ground as to the nature and origin of whooping-cough. The idea may or may not be pathologically correct; but the treatment founded on it is decidedly of a rational description. What is more to the practitioner, this treatment is said to prove remarkably successful. Correctly speaking, the idea is compounded of at least two factors. One of these is fully as familiar as whooping-cough is common. Micro-organisms are the cause of the affection. The microbe effects an entrance into the economy from a special site, and that site of entrance is the soft tissues of the nasal fossæ. The rational therapeusis is founded on formulæ of an equally explicit character. Antiseptics or germicides will destroy the living germs. They should be used early, and their sites of action are the nasal fossæ. The number of remedies already recommended is sufficiently striking. The method at present in greatest favor appears to be insufflation. Convenient contrivances of different designs for effecting the insufflation may be met with in great variety at the surgical instrument makers. A clumsy but successful

insufflator may be contrived by rolling a spill of paper, inserting a little of the powder to be employed at the end that enters the nostril, and supplying the motive force by the parent's or operator's puff of breath. But the puff-balls or regular insufflators are effective and not costly. Iodoform, salicylic acid, and boracic acid are the three antiseptics that appear to be most in vogue. They should all be very fine, almost impalpable powders. Nasal douches are very effective if they can be managed, as in older and not too nervous children. The most effectual douche of antiseptic kind appears to be the 1 in 500 corrosive sublimate. Care is to be taken that no appreciable quantity of this solution is swallowed. Some practitioners employ simple nasal douches in the earliest stages,—say, a drachm of Condy's fluid or of common salt to the pint of water. And this is done as much to mechanically wash away secretions with contained contagia as to destroy the germs. Weak solutions of tincture of iodine and of alum are also used. These lotions may be syringed into the nasal passages, or the children may be induced to snuff the lotion up from the palm of the hand. Older children may be taught to take the powders as "snuff." Repeated applications of any of these methods are necessary to insure thorough topical treatment in the early stages of the catarrh. The antiseptic agents may also be applied, as in young infants, by means of camel-hair brushes charged with ointments, lotions, or glyceroles. It is necessary to clear away all secretions and scabs first, by syringing or anointing with oil. The agent is then directly applied to the bare congested surface of the mucous membrane. An ointment of half a drachm each of iodoform and eucalyptol to an ounce of vaseline is highly commended by some. The boroglyceride may be used in similar fashion, also lotions of corrosive sublimate. Any of the antiseptic solutions may be atomized by the steam- or hand-spray, and inhalations effected through the nostrils. It is doubtful whether the theory of this fashionable method is correct; but supposing it should be, it is equally dubious whether the good that results may not be from the mere treatment of the catarrh as such, apart from its supposed cause. A pledget of cotton-wool, or a chamomile flower placed in the nostril to prevent the access of air, alleviates the symptoms of an ordinary rhinitis. So it may be with the various applications, the principal of which we have mentioned. Cocaine is now widely used as a four or five per cent. solution painted on to the nasal and pharyngeal mucous membranes, not only in whooping-cough, but in simple or severe catarrhs.—*Lancet*, January 15, 1887.

INVESTIGATION CONCERNING PERISTALSIS IN THE INTESTINE AND THE ACTION OF CATHARTICS.

HESS, of Munich, discusses at some length the theories which have been advanced to explain intestinal peristalsis and the action of laxatives, and describes his own experiments upon these points.

The original explanation of Liebig, that endosmosis and exosmosis governed the action of laxatives, and the theory of Aubert, that peristalsis depended upon an increased nervous reflex, have been defended and modified by other writers, some of whom have laid great stress upon the influence of increased secretions, and the hinderance to the absorption of these secretions which exists in venous stasis and accelerated peristalsis (Thiry). According to Vulpian, Lauder Brunton, Brieger, and Hay, laxatives cause increased peristalsis, as do also small doses of drastic purgatives; in large doses drastics cause an inflammatory exudate and hypersecretion; the neutral salts cause an outpouring of water into the intestine which is not a simple transudation, but a hypersecretion as well.

The author does not consider the present series of experiments as concluded, but as introductory to a more extended series. His method was as follows:

In a dog of medium size a gastric fistula was made, whose opening was near the pylorus. The finger introduced into the fistula was grasped by the muscle of the pylorus, and the beginning of the duodenum was accessible through the fistula. In the first portion of the intestine was placed a small rubber balloon, which terminated in a projection or handle to which a rubber tube could be attached; the capacity of this balloon, when moderately distended, was twenty to thirty cubic centimetres of fluid. To its tip or handle was attached a long rubber tubing, graduated in centimetre lengths and wound with thread to prevent its distention. After its introduction the balloon received from a graduated syringe a registered amount of water. The balloon sank into the pyloric opening, and began to pass through the intestine, advanced by the peristaltic action of the bowel. Its rate of advance could be easily measured by the graduated tube; it

could be emptied by this tube, or further distended without removing it from its place in the intestine.

It is evident that but sufficient tubing was needed to traverse the entire intestine; the animal showed no signs of discomfort. By checking the progress of the balloon, it could be used as a tampon for dividing the intestines; by allowing it to be expelled, fluid could be injected into the lower bowel through the tubing.

To ascertain the mode of the normal peristalsis two series of observations were undertaken, in the first of which the balloon contained forty-five cubic centimetres of water, in the second twenty-two cubic centimetres.

The balloon in the first instance was filled *in situ*, and a laxative mixed with ferrocyanide of potassium administered.

An examination of the fæces showed the coloring-matter, and proved that the distention of the balloon was not so great as to entirely occlude the intestine. In twenty-nine hours and fifty minutes the balloon had proceeded a distance of one hundred and forty-nine cubic centimetres, where it stopped, and, after remaining immovable for several hours, was finally emptied, and expelled by a soap-and-water clyster. There was every reason to suppose that its lodgment was at the ileo-cæcal valve, which could not be passed by a ball of its dimensions.

The next experiment was with the balloon containing twenty-two cubic centimetres of water, and resulted in the passage of the balloon nearly to the anus, a distance of two hundred and twenty centimetres in the animal used, in twenty-three hours and twenty-five minutes. It was, as before, expelled by an enema.

The experiments of Crampe have established the ratio between the body length and length of the intestines at eight and one-half times. By this proportion the length of the intestines in the animal the subject of this experiment was six hundred and eighty centimetres. A post-mortem measurement gave five hundred and thirty centimetres as the length. The balloon passed less than two hundred and fifty centimetres in traversing the intestines, and the difference is accounted for by the contracted condition which peristalsis induces. This condition of contraction was followed by relaxation behind the balloon, which rested in a sac of intestine for varying intervals. This was demonstrated by the difference in the distance traversed at ten-minute intervals during the progress of the experiment. Subtracting the one hundred and forty-nine centimetres from the two hundred and twenty centimetres passed by the balloon the second time, we have seventy-one centimetres as the length of the large intestine, the distance from the anus to the ileo-cæcal valve. Post-mortem measurement gave this distance seventy-three centimetres.

It was observed that peristalsis began a short distance below the pylorus, and was, as has been said, intermittent in pauses of even an hour's duration. It was also much more vigorous near the pylorus, and became less active as the distance from the stomach increased, as Nothnagel had shown previously. It was noticeable that the bolus which moderately filled the intestine passed more rapidly than the larger one which distended it.

Expiration favored peristalsis. In the large intestine the balloon moved much more slowly than in the small bowel.

The relative vigor of peristalsis during day and night was 3 to 1.

Long pauses in the movement of the balloon were observed with some animals, which could not be explained.

As the balloon progressed more deeply into the bowel a secretion was established in the stomach, which was thought to be the result of reflex action.

The force exerted in normal peristalsis was measured by passing the rubber tubing over a pulley, and attaching to its extremity a bag in which shot was placed. The following were the results:

Just within the pylorus the force exerted by the intestine sustained two hundred and twenty-eight and one-half grammes, or about seven ounces. As the distance from the stomach increased, the weight sustained and raised diminished to 90.4 grammes and 75.5 grammes. While the author does not consider this portion of his experiment as at all conclusive, yet it illustrates forcibly the peristaltic power of the intestines.

In ascertaining the mode of action of laxatives the rubber tampon (the balloon) was allowed to go some distance in the intestine, and then kept stationary. A cathartic was given, and the phenomena attending its action in the presence of the tampon were observed, and, with the exception of ox-gall, none caused diarrhœa, while their entrance to the small intestine only was allowed.

When the balloon was collapsed, diarrhœa generally began promptly as soon as the drug had gone farther into the large intestine. As before, it was endeavored to *fill* the intestine

without distending it, and potassium ferrocyanide was used as previously. In addition to those cases in which no diarrhœa was caused by the descent of the laxative material, there was a proportion of cases in which the cathartic seemed reabsorbed by the intestine before it reached the large intestine.

The list of laxatives used in experimenting included sodium sulphate, castor oil, calomel, senna, croton oil, colocynth, gamboge, and oxgall. Each drug was given first, without its confinement in a particular part of the intestine, and its effect, when given in this manner, was contrasted with that produced when, by the agency of the balloon, its effect was limited to a particular portion of the bowel. At the conclusion of his experiments the author repeats as follows what we have stated: "All laxatives with which experiments were made, especially in active doses, occasioned no diarrhœa when prevented by the balloon used from going into the large intestine."

These laxatives effected the results which followed their ingestion by a direct action on the mucous membrane of the intestine. Those drugs which cause laxative effects when injected into the blood are absorbed too slowly and in too small quantities when introduced into the intestine to produce their previous effects.

Supposing catharsis to result from accelerated peristalsis, these experiments would tend to show that the action did not result from the contraction of long portions of the muscular coat, nor from a rapid action communicated from one muscle to another, but through the irritation of successive portions of the mucous membrane of the intestine. It is also a reasonable supposition that the peristaltic distention, which was always present just above the balloon, was disseminated through the whole of the small intestine, and excited afterwards by the cathartic in the large intestine.

The author took especial pains to avoid the paresis of the intestinal muscle, which overdistention of the balloon used might have caused through its pressure, and the balloon was allowed to play only the part of a moderate accumulation of fæces.—*Deutsches Archiv für Klinische Medecin*, Band 40, 1 Heft.

A NEW TREATMENT OF GONORRHŒA.

CASTALLAN, of St. Mandrier Hospital, starting with the view, now popularly entertained, that gonorrhœal urethritis is a parasitic disease, and being led by observation to believe that the microbe can only live in an acid medium; finding, moreover, that in this disease the discharge is, as a rule, acid, proposes to treat gonorrhœa in the acute stages by urethral injections of sodic bicarbonate, three or four injections being made daily of a one per cent. solution. For this treatment, which is but a logical inference from the premises, he claims remarkable success, although the cases on which it has been tried in St. Mandrier, as yet, number only a dozen. The injections of bicarbonate of sodium are commenced as soon as the discharge appears, or the patient comes under observation; the urethral secretion is tested every day with litmus-paper, and the injection is kept up till the discharge becomes alkaline or neutral. For internal treatment the patient is given flaxseed tea, with occasional doses of bromide, if there seems to be any indication for the sedative effects of this salt. His conclusions are as follows:

1. The urethral pus in the first stages of the disease is generally, if not invariably, acid; this acidity is quite pronounced.

2. The treatment by bicarbonate of sodium rapidly lessens the discharge; it also rapidly diminishes or removes the pain in micturition.

3. In old urethrites, and in those which have been treated by the usual injections, it speedily brings about a cure.—*Boston Medical and Surgical Journal*, January 13, 1887.

THE SUBCUTANEOUS AND INTRAMUSCULAR INJECTIONS OF PREPARATIONS OF IODINE IN SYPHILIS.

The rather unsatisfactory state of the therapeutics of syphilis at the present day justifies a careful attention to suggestions of improvement as found from time to time in the medical press. In addition to the exhibition of iodoform in syphilitic lesions, as discussed in a previous issue of the THERAPEUTIC GAZETTE, we now beg to review a recent paper of DR. CARL SCHADECK, of Kiew, which appeared in the *St. Petersburger Medicin. Wochenschrift*, No. 29, 1886, and advocates the employment of preparations of iodine.

Schadeck instituted a series of clinical experiments with the iodides of sodium and potassium on soldiers of the Kiew military hospital affected with syphilis. There were eight cases in all, and the number of subcutaneous and deep intramuscular injections made was ninety. The largest number of injections made in one individual was sixteen (in two cases); in the other cases the number of injections was twelve (two cases), ten, nine,

eight, and seven. In seventy-nine instances the injections used were a solution of iodide of potassium; in the remaining eleven iodide of sodium was used. The employed solutions were carefully neutralized, filtered, and prepared according to the following formula:

℞ Potassii (sodii) iodat., gr. xlv;
Aquæ dest., fʒiiss.

This solution was daily prepared fresh, and injected by means of a Pravaz syringe, each patient receiving daily about 3½ grains of the iodine salt. Of the ninety injections twenty-six were carried deeply under the aponeurosis of the gluteal muscles (Arcari's method), and the remaining sixty-four in the ordinary manner. The deep intramuscular injections were made without raising a fold of the integument, piercing with the needle the skin, the cellular tissue, and the fascia perpendicularly. In this manner the entire quantity of the solution was carried directly into the parenchyma of the muscle.

The principal results obtained by Schadeck's experiments, as far as they interest the general practitioner, can be conveniently epitomized as follows:

1. The pain resulting from the injection itself, or the puncture of the needle, was either quite immaterial or wholly absent.*

2. The injected solution generated invariably a painful irritation, which differed in intensity, duration, and character in the various instances.

3. In no instance appeared an abscess or inflammatory infiltration on the point of injection.

4. In two patients appeared after nine or ten injections an iodine exanthema on face, trunk, and extremities in form of small acnepustules. This eruption disappeared almost immediately after withdrawing the applications.

5. As to the therapeutic effects obtained no palpable results could be anticipated, as the number of injections did in no case suffice to develop the full iodine action against the syphilitic lesions. It has repeatedly and conclusively been shown that iodine introduced into the system hypodermically is taken up by the bodily juices, and exerts thus its specific action. In two instances the experimenter succeeded in eliminating all syphilitic lesions by the exclusive hypodermic application of the two salts of iodine.

6. Although these experiments are in themselves too scanty, and possibly too superficial to justify any definite conclusion as to the therapeutic value of the foregoing hypodermic uses of the salts of iodine, they nevertheless go far in showing that the mercurial treatment is no *conditio sine qua non* in the treatment of syphilis, and encourage further trials in the indicated direction.

* In Germany the hypodermic syringes in use have all extraordinary long needles (compared with the American instrument), and are also carried into the muscular parenchyma in order to obviate pain and eventual abscesses of the cellular tissue.

A NOVEL TREATMENT OF PHTHISIS.

Dr. Bergeon, of Lyons, recommends a method of treating phthisis which has, at any rate, the merit of novelty. His plan is to utilize the effects of sulphuretted hydrogen, and this he proposes to do by injecting carbonic acid gas, saturated with sulphuretted hydrogen, into the intestines. If care be taken to secure the absence of atmospheric air, no inconvenience, it is said, results from the injection even of large quantities of the mixture; absorption into the venous system and elimination by the lungs taking place very rapidly. It is claimed for this procedure that, by its means, the use of sulphuretted hydrogen is unattended with any toxic effects, and exerts its influence directly on the lungs themselves. It has been employed in a number of cases at the hospitals of Lyons, Bordeaux, and Paris, with great benefit to the patients, even in very advanced cases, and, latterly, similar observations have been made in the consumption hospitals of London, the results of which have not yet been made known. The method has been very much simplified by the introduction of an ingenious but simple apparatus whereby the carbonic acid gas is generated, and saturated with sulphuretted hydrogen, ready for use.—*British Medical Journal*, November 27, 1886.

THE DRUGS WHICH INCREASE AND DECREASE THE SECRETION OF MILK.

Giurleo calls attention to the peculiar properties of *Ditana digitifolia*, which, he claims, possesses the power to stimulate the secretion of the mammary glands, confirming the statements published in a previous issue of the Gazette. The author found an opportunity to try the remedy in a number of wet-nurses, and pronounces himself as extraordinarily satisfied with the results obtained. In some instances, in which the secretion was

almost wholly absent, the ingestion of an infusion of the plant produced a copious supply of milk.

In Italy an ethereal tincture of *Ditana digitifolia*, combined with syrup, has been known for a long while under the name of "galatiofore."

The blossoms and buds of the plant, besides, possess diaphoretic properties.

The same author asserts that *Rhamus alaternus* and *Ligustrum vulgare* have properties precisely opposite to those of *Ditana digitifolia,—i.e.*, they decrease the secretion of milk. The author uses an infusion of these plants (45 grains of the leaves to 6 ounces of water), and orders for several days this quantity of the infusion to be used up twice a day. —*Journal de Médecine de Paris*, July 11, 1886.

PEREIRINE AS A TONIC.

The bark of the pao-pereiro tree is said to be a tonic and febrifuge. It contains an alkaloid which was first isolated by Ezequiel in 1838. The name of Pereirine has been given to it. The product of that name used in Brazil is an amorphous yellow powder, which is not a pure alkaloid, but contains a compound of amyl, a bitter coloring substance insoluble in water, analogous to glucose, a hydrocarburet, and another crystallized substance, probably a glycoside. Pereirine is very slightly soluble in water, to which it communicates a bitter flavor, but dissolves easily in ether. M. GUIMARAES has proved that pereirine produces the following effects: 1. A period of agitation characterized by slight convulsive trembling of the skin, irregular respiratory movements, decrease of the central and peripheral temperature and of the pulse-beat. 2. A period of functional paralysis, consisting in aphonia, diminution in the number of respirations, elevation of temperature, paralysis of voluntary movements. 3. A period of complete paralysis ending in death. Pereirine, as sold commonly, is impure. M. Fereira has administered doses of two grammes a day in cases of persistent paludal infection.—*British Medical Journal*, January 1, 1887.

ANTIFEBRIN AS ANTIPYRETIC AND ANTISEPTIC.

The researches of DR. G. KRIEGER with antifebrin, as published in the *Centralblatt für Klinische Medicin* (October 30, 1886), seem not only to corroborate the claims of Heppe and Cahn as to the antipyretic virtues of the drug, but have also yielded the fact that the new remedy possesses energetic antiseptic properties.

Antifebrin was found to be soluble at a temperature of 60° F. in one hundred and sixty parts of water, and at a temperature of 212° F. in twenty-five parts of water. In acids it is scantily soluble in presence of cold, but readily so if heated. On cooling, the saturated solution assumes a gelatinous consistency through precipitation of the crystals. More easily than in water antifebrin is soluble in ether, alcohol, and alcoholic liquids, without impairing their taste.

Krieger made his observations in the eighteen following cases: Typhoid fever, four cases; intermittent fever, three; croupous pneumonia, three; acute articular rheumatism, three; pleurisy, two; diphtheria, one; puerperal fever, one. Besides, the drug was exhibited in several cases of facial neuralgia, where it caused the immediate disappearance of otherwise regularly-appearing paroxysms.

In order to determine the comparative value of antipyrin and antifebrin, a series of observations was made in various cases of typhoid fever, and showed—differing somewhat from the results obtained by Cahn and Heppe—that 7 grains of antifebrin corresponded in duration and magnitude of effect to 15 grains of antipyrin, though the former requires a longer time for the manifestation of intense action.

Krieger adds to his paper a number of clinical charts illustrative of the absolute and comparative physiological properties of antifebrin. These charts show that a slight action set in very soon after ingestion of the drug. An intense action, however, cannot be observed before the third hour, and between the sixth and the tenth hour all action has disappeared. Simultaneously with the temperature the frequency of the pulse is lowered, while its magnitude and tension increase. The author states that no secondary symptoms were ever recorded in the course of the antifebrin treatment, excepting a regularly discernible cyanosis of the cheeks and the visible mucous membranes. Vomiting, or even an inclination to vomit, such as frequently attends the ingestion of antipyrin, was likewise not observed. Sweating has been seen in a few instances, and a great appetite in numerous cases as results of this treatment.

The action of antifebrin, though it was in no instance negative, manifests itself quite

differently in different affections. Typhoid and intermittent fever receive the greatest reduction of heat. In pneumonia, pleurisy, and especially in puerperal fever, the antipyretic properties of antifebrin are less conspicuous. The entire absence of rigors in the reascent of temperature is an especial feature of the antifebrin action.

It is difficult to as yet define the exact indications for antifebrin, and to explain the *modus operandi* of its physiological action. Against any action from the part of the gastric juice speaks the wholly negative result obtained in a case of so-called artificial digestion (by means of pepsin and muriatic acid at 92° F.). The cyanosis, however, above referred to justifies the assumption that at least a part of the antifebrin is changed back into aniline.

As to the dose, Krieger advises to begin with 10 to 15 grains, and to gradually increase it; 50 grains were in many instances given *pro die* with perfect impunity.

A number of surgical cases coming under the observation of Krieger convinced the author that antifebrin possesses also distinct antiseptic virtues. In these cases the drug was used either as a powder or dissolved in ether or collodion. The closed wounds thus treated healed invariably *per primam intentionem;* the open ones showed little or no irritation and suppuration.

The action of the drug upon micro-organisms will form the subject of a later publication of Krieger. A more extensive application of antifebrin for internal and surgical purposes is facilitated by the extraordinary cheapness of the drug.

THE CURABILITY OF ALCOHOLIC CIRRHOSIS.

According to a Paris correspondent, a short time since M. Troisier communicated a case to the Société Médicale des Hôpitaux in which the ascites resulting from cirrhosis of the liver had disappeared under the influence of iodide of potassium and strychnine, and the visceral lesion itself had seemed to be cured. In the discussion which ensued it was pointed out that ascites sometimes passes away spontaneously in the course of a cirrhosis, and, on the other hand, the affection of the liver may go through all its phases without giving rise to peritoneal effusion. M. Troisier now goes further. He asks whether there does not exist a particular form of alcoholic cirrhosis in which the lesion, stopping short of destruction of the liver-cells, is susceptible of retrogression; and he relates another case in support of this hypothesis. A confirmed drinker, aged 68, was under the care of a colleague, and presented all the symptoms of hepatic cirrhosis. Between the months of December and September one hundred and sixty-five litres of fluid were removed by tapping at different times. At the present time the peritoneal cavity is empty, the liver slightly enlarged, and the patient in excellent health. M. Bucquoy said that he had seen several similar cases, and he entertained no doubt that other members of the Society had had a like experience.—*The Lancet*, December 25, 1886.

INDIAN HEMP AND BELLADONNA IN WHOOPING-COUGH.

Vetlesen recommends in the *Norsk Mag. f. Laegevidenskaben*, 1886, No. 9, the following prescription as a cure for pertussis:

℞ Extr. cannab. indic., gr. xv;
Extr. belladonnæ, gr. vii;
Alcoh. absol.,
Glycerini, āā ʒiss.

To be given to children of 8 months to 1 year in 4- to 5-drop doses; 1 to 2 years in 5- to 8-drop doses; 2 to 4 years in 8- to 12-drop doses; 4 to 8 years in 10- to 13-drop doses; 8 to 12 years in 12- to 15-drop doses; over 12 years and to adults in 15- to 20-drop doses.

The medicine is to be taken either only in the evening, or evening and morning. In children younger than 8 months Vetlesen has not yet tried the remedy. The number of cases thus treated is one hundred and sixteen; in eighty-three (71.6 per cent.) the result was favorable, and in thirty (25.9 per cent.) the result was excellent. Injurious effects have never been observed. Controlling experiments have shown that neither of the two drugs, when given alone, could bring about the favorable results attending their combination.

CARBOLIC ACID IN WHOOPING-COUGH.

Dr. F. P. Anderson, of Grosse Isle, writes to us that he has treated a number of cases of pertussis during the past three months with small doses of carbolic acid, and in one case only did he resort to other remedies.

In several cases in the same household the paroxysms of coughing and vomiting were arrested so promptly as to cast doubt on the

correctness of his diagnosis, a doubt dispelled by temporarily withholding treatment in one subject.

The triturated tablets containing one-tenth grain of carbolic acid were administered generally, and introduced without objection into the child's mouth. To an infant of 3 months of age a half tablet (gr. $\frac{1}{10}$) was given every three or four hours; to children from 1 year to 3 years of age the dose is one tablet. Care must be exercised in increasing dose for age.

The cases treated during the fine weather of October and November were discharged cured in from two to three weeks, although from the commencement the intensity of the symptoms was modified. All but one were taken in hand as early as the affection was recognized; this excepted one had been whooping and vomiting for several days, and yielded almost as readily as the other.

The weather throughout was favorable, but many patients were of the poorest class, and received little care.

Attention to this use of carbolic acid was directed first by Dr. Macdonald, of Liverpool, England, as long ago as 1881.

THE TREATMENT OF TYPHOID FEVER BY CORROSIVE SUBLIMATE.

In the *Deutsches Archiv für Klinische Medicin* of November 30, 1886, GLÄSER, of Hamburg, reports the results obtained in twenty-three cases of typhoid fever by the use of corrosive sublimate. The cases selected were those in which the diagnosis was plain, and which were of at least moderate severity, and which had not advanced so far that medication was useless. The number of cases treated was too small to be of value in statistics of mortality, but large enough to give a result as to the effects of the drug upon the principal symptoms of typhoid.

The following were the results obtained:

1. In twenty-three cases five deaths, a mortality of twenty-one per cent.

2. Four cases showed a fall in temperature to the normal before the nineteenth day of illness, on the thirteenth, fifteenth, sixteenth, and nineteenth days respectively after sublimate was given on the sixth, eighth, and tenth days.

Two parallel cases which had no sublimate showed a fall of temperature on the fifteenth and sixteenth days.

Six cases showed a fall of temperature to the normal on the twentieth to twenty-third days after two doses of sublimate on the eighth day, and on the ninth, tenth, eleventh, and fifteenth days, one dose.

Five parallel cases, without the sublimate treatment, showed similar defervescence.

In eight further cases the fall to normal temperature came later; two on the fifteenth day, one on the sixteenth, two on the seventeenth, one on the eighteenth, one on the twentieth, one on the twenty-second day after taking the sublimate.

3. Sublimate had no influence upon the condition of the tongue; in eight cases it remained dry, and did not alter until defervescence occurred.

4. The roseola of typhoid was in eleven cases aggravated by sublimate to such a degree that the face was affected, and the cases resembled measles.

5. The general condition of the patient was not in the least improved.

The influence of the treatment on the duration of the illness and its relapses is best shown by the following table:

Day of administration.	Duration of fever.	Day of administration.	Duration of fever.
6.....	60 days.	10.....	51 days.
	66 "		74 "
7.....	51 " (Relapse.)		89 " (Relapse.)
8.....	41 "	11.....	51 "
	48 "	12.....	64 "
	90 "	13.....	59 "
9.....	44 "	15.....	51 "
	45 "		
	64 " (Relapse.)		

The question of greatest interest in these reports is the dosage and the bearing of the cases upon the possibility of effectually destroying the bacillus of typhoid fever in the organism. When the amount of blood (at one-thirteenth of body-weight) to be disinfected is considered, we find that using a solution of sublimate, 1 to 4000 or 5000, its proportion to the blood would make the actual proportion of mercurial to the blood $\frac{1}{10400}$, which is a solution inert as a parasiticide. In the series of cases cited it was given in eight doses *pro diem*, the total given being three-tenths of a grain in a day and a half, the solution used being 1 to 4000 or 5000.

The series illustrates in an interesting manner the difficulty of practically disinfecting the blood while still within the body without at the same time destroying life.

THE ACTION AND THERAPEUTIC VALUE OF VEGETABLE ASTRINGENTS.

The term astringent in its widest sense as including styptics may be defined as referring to substances which either when locally ap-

plied or after absorption into the blood cause contraction of the tissues, diminish secretion, and arrest hemorrhage. Those which so act after absorption into the blood are known as remote astringents, and include acids, many salts of the heavier metals, ergot, digitalis, gallic and tannic acids, and many of the substances containing them. To the last of these it is customary to apply the name of vegetable astringents, and their mode of action and therapeutical value has been carefully investigated by DR. RALPH STOCKMAN, who publishes his results in the *British Medical Journal* for December 4, 1886. His paper includes an elaborate series of experiments as to the mode, form, and amount in which these bodies are absorbed and circulate in the blood, and are excreted, and as to their action on the blood-vessels and circulation.

Our space will not permit an analysis of these experiments, for which we must refer the reader to Dr. Stockman's paper. His conclusions as to the therapeutic value of vegetable astringents are, however, of considerable interest and value. Considering gallic acid first, he says that either when locally applied, or after absorption into the blood, gallic acid evidently exercises no other action than that of a weak inorganic acid, and certainly has no claim to any special action as an astringent. The only action which it can have in this direction is the power which it possesses, in common with all other acids, of diminishing the alkalinity of the blood, and thereby increasing its tendency to coagulate. Stronger acids, however, will act much more powerfully in this direction than it does. Any influence in lessening the calibre of the blood-vessels, either by peripheral or central action, must be denied to it. When locally applied, the fact that it does not precipitate albumen must prevent it having any influence on a catarrhal inflammation.

As regards tannic acid, the matter is somewhat more complicated. Locally applied, its action for good depends on its power of precipitating albumen, the layer of tannate of albumen which is formed acting as a protective to the underlying mucous membrane. To this action is due its value in catarrhal inflammations of the alimentary canal, and in discharging surfaces generally.

The preceding experiments show, however, that its usefulness is limited to such cases, and that as a remote astringent it is valueless. In weak solution and uncombined its action on contractile tissues, such as the vascular walls, is simply that of a dilute acid, while it is only when stronger solutions are used (much stronger than can ever exist in the blood, even if it were not in combination there) that its power of precipitating albumen comes into play. When its chemical affinities have been satisfied by neutralizing it with a base or with albumen, it is no longer capable of precipitating albumen, and exercises, therefore, little or no influence on the parts with which it comes in contact.

Independently of these considerations, the very small quantity in which it exists at any one time in the blood, and that in combination, must also militate against its having any remote action. As we have seen, the only channels of excretion besides the bowel are the kidneys, and hence it is hardly possible that it can have an astringent action on any of the other mucous membranes, such as the bronchial. It is now almost an axiom in therapeutics that substances which do not possess a very decided general action can affect only those mucous membranes by which they are excreted, and it is improbable that tannin is any exception to this.

With regard to its action on the kidneys, it is conceivable that it may have a favorable influence in diminishing albuminuria, but even this is to be regarded as doubtful. Many eminent clinicians have expressed disbelief in its value, and the only cases which the author has been able to find, in which the amount of albumen in the urine was carefully estimated from day to day, tend to confirm this view. They are four cases of chronic Bright's disease reported by Briese (*Deutscher Archiv. f. Klin. Med.*, xxxiii., p. 220, 1883) in which the administration of tannate of sodium for long periods had no influence, either on the amount of urine or the albumen present in it.

FATAL POISONING FOLLOWING TWO VAGINAL DOUCHES WITH CORROSIVE SUBLIMATE SOLUTION.

FLEISCHMANN, of Prague, reports the following instructive case: A perfectly healthy primipara, aged 17, exhibited no symptom of kidney-disease or of any other complication of pregnancy. To disinfect the vagina before labor two douches of 1 to 2000 solution of sublimate were given, one before and one after examination by a midwife. It was noticed that a small amount of bloody mucus was expelled from the vagina after the douches. In a few hours abdominal pain, diarrhœa, and a rise of temperature occurred, all the symptoms and lesions of mercurial poisoning developed, ne-

phritis, salivation, and continued diarrhœa, and, after giving birth to a living child, the patient died in coma on the ninth day after the douches were given. The pathological anatomical diagnosis made at the autopsy was "corrosive sublimate intoxication, acute nephritis, dysentery, stomatitis and pharyngitis in the stage of ulceration, parenchymatous degeneration of heart and liver, lobar and lobular pneumonia, bilateral, acute cystitis."

On investigation it was found that after receiving the douche the patient had left her bed and gone about her work in the ward. It is not probable that any considerable amount of fluid remained in the vagina after the douche, as all ordinary precautions were taken to secure its expulsion. It is, however, quite possible that some of the fluid may have gone into the uterus and become absorbed by any superficial lesions which had occurred in the beginning dilatation of the os uteri.

It was also true that the patient had diarrhœa before the douches were given, and in his remarks upon the case Fleischmann calls attention to the danger attending the use of sublimate in puerperal patients in whom any lesion or disordered condition of the kidneys or bowels exists. He quotes the words of a well-known obstetrician, who asserts that the use of sublimate should be limited to the disinfection of the external genitalia and hands and instruments.—*Centralblatt für Gynäkologie*, No. 47.

THE MYDRIATIC PROPERTIES OF HYDROBROMATE OF HYOSCINE.

Mr. John Tweedy states in the London *Lancet* for December 4, 1886, that he has found that a few drops of hydrobromate of hyoscine in a half of one per cent. solution proved to be a rapid, powerful, and unirritating dilator of the pupil alike in the healthy and in the inflamed iris, and a paralyzer of the accommodation. Notwithstanding its great activity, when given internally or subcutaneously, he has not yet met with any instance of its producing toxic effects, such as occasionally follow the use of duboisine, though these contingencies may be possible with stronger solutions. Mr. Tweedy has found that the action of hyoscine is almost three times as rapidly produced as by atropine in removing the "nearest point," in paralyzing accommodation and in fully dilating the pupil, while the effects of hyoscine also last longer than those of atropine, and are not so easily counteracted by eserine. The indication seems to be that if hyoscine is to find a place in ophthalmic therapeutics, it will be chiefly in cases of iritis and in other conditions where it is desirable to produce as much dilatation of the pupil as possible, and for as long a time as possible.

It is further worthy of note that the application of hyoscine to the eye does not seem to cause the unpleasant taste and feeling in the throat which often follows the use of atropine.

THE ANTISEPSIS OF THE HANDS.

Belaieff, of Kiew, recommends the following as a sure and easy method of cleansing and disinfecting the hands:

Before the disinfecting fluid is applied the hands are thoroughly rubbed with a vaseline salve containing the coloring-matter called aqua-marine, in the proportion of 1 to 5 or 8 of vaseline.

The nails and spaces about the nails should be thoroughly filled with the salve, and its color affords a good indication of the thoroughness of its application. The hands are then well scrubbed with soap and brush until every particle of color has disappeared, when a thorough douching with solution of corrosive sublimate, 1 to 2000, completes the process.

Kümmall has stated that an efficient disinfection of the hands occurs when they are brushed for three or five minutes with potassium soap, and then thoroughly washed with three or five per cent. solution of carbolic acid, one-tenth of one per cent. solution of sublimate, or one-third of one per cent. solution of thymol.—*Pharmaceutische Post*, December 11, 1886.

CALOMEL AS A DIURETIC.

The virtues of calomel have in these days come to be somewhat undervalued, a reaction doubtless from the indiscriminate prescription of former times. Dr. Mendelsohn (*Deutsch. Med. Woch.*, No. 45) calls attention to its value as a diuretic, especially in cardiac dropsy, basing his remarks upon papers recently published by Dr. Jendrassik, of Pesth, and Dr. Stiller, already fully described in the Gazette. The former, having noticed the marked diuresis which ensued in a severe case of cardiac dropsy after the administration of jalap and calomel, found by further observation of other cases that this effect was due to the calomel and not to the jalap. In the great majority of the cases the daily quan-

tity of urine reached from two to five or more litres on the second to fourth day of calomel treatment. Stiller's experience is confirmatory of this, and Dr. Mendelsohn adds his own testimony to the value of the prescription. He says that when calomel is prescribed in doses of from 0.2 to 0.3 gramme (*i.e.*, 3 to 5 grains) three times a day, diuresis occurs within eight hours. It is not necessary to induce salivation to get this result, which often takes place with surprising rapidity; the anasarca and serous effusions disappear, and the patient is much relieved. It is said to be even more effective than digitalis, squills, and other remedies in certain cases, especially when the pulse-tension is not very low. Calomel does not, however, act through the heart, and is often advantageously combined with digitalis.—*The Lancet*, November 20, 1886.

INCONVENIENCES IN THE USE OF TINCTURE OF IODINE.

The *Répertoire de Pharmacie* for 1886 describes a method of removing the disagreeable yellow stain which remains after the application of iodine:

In the case of the hands where the skin has become hardened we can employ dilute ammonia, soda, charcoal, or common soap; but in treating women whose skin is tender, and in those parts of the body where the integument is not hardened, we prefer the sulphites, the bisulphites, or alkaline hyposulphites, substances inodorless and non-irritating, which absorb iodine by both their acid and their base.

We have used especially the sulphite of sodium in solutions of $\frac{1}{100}$ to $\frac{1}{10}$. This is pencilled upon the place where the iodine has been applied or used in compresses. In a few moments after application the pain and irritation caused by the iodine have disappeared.

EXPERIMENTAL RESEARCHES ON THE BIOLOGICAL ACTION OF BERBERINE.

CURCI'S experiments lead him to the following conclusions (*Annali di Chimica e de Farmacologia*, July, 1886): Berberine has a paralyzing action on the brain, and especially on the voluntary motor centres, and on the centre for food appetite. It has a weak action on the sensitive centres. On the spinal cord and on the reflexes it acts late,—that is, when the blood circulation is very languid and the heart is nearly paralyzed. This is in mammals. In batrachians the reflexes persist even after the arrest of the circulation. At the time it acts on the respiratory centres, at first exciting and then paralyzing them. The action of berberine on the circulation is rapid and energetic, the vessels are paralyzed, and the blood rushes to the periphery. The arterial pressure falls to zero, the heart beats more frequently, and the temperature falls. The vaso-motor nerves are first paralyzed, and then the muscular fibres of the heart and of the vessels. In consequence of the vascular paralysis all the other functions languish, and the state of the circulatory system may be the true cause of death, in which respiration is first arrested, and immediately afterwards the heart. It has no action on the vagus, either excitant or paralyzing, even in toxic doses. It causes a fall in temperature by increased dispersion of heat, in consequence of the vaso-motor paralysis, and it is not a poison of the protoplasm. Under the influence of berberine blood remains for a longer time undecomposed, and yields oxygen with more difficulty. It relaxes the tissue of the spleen, and increases rather than diminishes the size of this organ. It increases the peristaltic action of the intestine, both by its direct local action and by its general action after it has been taken into the blood-current; and produces at first diarrhœa and then a condition resembling dysentery. Acid urine is secreted even in the herbivora (rabbits). At times it is albuminous, and contains granular epithelial casts. The kidneys are congested, and sometimes present the signs of inflammation. Most of these conclusions were already published by the author in 1881.—*The London Medical Record*, No. 136, October 15, 1886.

THE DETECTION OF BLOOD-CLOTS IN THE PRESENCE OF IRON RUST.

DANNENBERG has found a new crystalline substance, which he calls hämidin, the formation of which, in a crust in which blood is suspected, he considers a proof positive of its presence. It is produced in the following manner:

Two, four, or six drops of strong solution of potassium hydrate are dropped upon the crust, and allowed to remain there an hour. When the crust has softened it is carefully transferred to a porcelain dish and washed. A few drops of ammonium sulphate are added and the whole gently warmed. After ten minutes water is added and the whole fil-

tered. The filtration proceeds slowly, but the first drops show by the method of Erdmann the new crystals. A drop of the filtrate is placed upon a slide and dried, and a little acetic acid added. If blood be present, a mass of brown, rhombic plates appear, with a clearer, lighter spot in the centre; they are thought by Dannenberg to be proof of the presence of blood.

Crystals of other shapes are formed, and of other substances, but they do not present the characteristic features of hämidin. This substance is formed from blood by diluting it with two parts water, adding chloride of iron, and, after removing supernatant fluid, adding to the sediment ammonium sulphate. Water is added and the whole filtered, and the crystals are found in the filtrate.—*Deutsche Medizinal Zeitung*, December 9, 1886.

As an example of the prompt detection and correction of an error, Dannenberg, in the *Pharmaceutische Centralhalle* of recent date, states that he has repeated his experiments in the light of adverse criticism made by Amthor in the *Chemiker-Zeitung*, and agrees with his critic that the crystals which he found are *not* peculiar to blood, but are those of sulphur formed from the ammonium sulphide.

The whole is an interesting example of a recognized error in science, and may serve as a caution to those who work in physiological chemistry.

THE MANAGEMENT OF SIMPLE CONSTIPATION.

The untoward consequences of constipation are always considerable and sometimes serious; and greater than the anæmia, the blood-poisoning, the headache, the nervousness, and the heart disorders which rise out of fæcal retention are the untoward consequences of ignorant and unskilful domestic management.

In the *Lancet* for January 1, 1887, Sir Andrew Clark formulates the following brief and concise rules for the management of simple constipation:

1. On first waking in the morning, and also on going to bed at night, sip slowly from a quarter to half a pint of water, cold or hot. 2. On rising, take a cold or tepid sponge-bath, followed by a brisk general towelling. 3. Clothe warmly and loosely; see that there is no constriction about the waist. 4. Take three simple but liberal meals daily; and, if desired, and it does not disagree, take also a slice of bread-and-butter and a cup of tea in the afternoon. When tea is used it should not be hot or strong, or infused over five minutes. Avoid pickles, spices, curries, salted or otherwise preserved provisions, pies, pastry, cheese, jams, dried fruits, nuts, all coarse, hard, and indigestible foods taken with a view of moving the bowels, strong tea, and much hot liquid of any kind, with meals. 5. Walk at least half an hour twice daily. 6. Avoid sitting and working long in such a position as will compress or constrict the bowels. 7. Solicit the action of the bowels every day after breakfast, and be patient in soliciting. If you fail in procuring relief one day, wait until the following day, when you will renew the solicitation at the appointed time. And if you fail the second day, you may, continuing the daily solicitation, wait until the fourth day, when assistance should be taken. The simplest and best will be a small enema of equal parts of olive oil and water. The action of this injection will be greatly helped by taking it with the hips raised, and by previously anointing the anus and the lower part of the rectum with vaseline or with oil. 8. If by the use of all these means you fail in establishing the habit of daily or of alternate daily action of the bowels, it may be necessary to take artificial help. And your object in doing this is not to produce a very copious dejection, or to provoke several smaller actions; your object is to coax or persuade the bowels to act after the manner of nature by the production of a moderate more or less solid-formed discharge. Before having recourse to drugs, you may try, on waking in the morning, massage of the abdomen, practised from right to left along the course of the colon; and you may take at the two greater meals of the day a dessertspoonful or more of the best Lucca oil. It is rather a pleasant addition to potatoes or to green vegetables. 9. If the use of drugs is unavoidable, try the aloin pill. Take one half an hour before the last meal of the day, or just so much of one as will suffice to move the bowels in a natural way the next day after breakfast. If it should produce a very copious motion, or several small motions, the pill is not acting aright; only a fourth, or even less, should be taken for a dose. When the right dose has been found it may be taken daily, or on alternate days, until the habit of daily defecation is established. Then the dose of the pill should be slowly diminished, and eventually artificial help should be withdrawn. The aloin pill is thus composed: ℞ Aloinæ, ½ gr.; extr. nucis vom., ½ gr.; ferri sulph., ½ gr.; pulv. myrrhæ, ½ gr.; saponis, ½ gr. Fiat pil. 1. If the fæces are dry and hard,

and *if there is no special weakness of the heart*, half a grain of ipecacuanha may be added to each pill. Should the action of the pill be preceded by griping and the character of the action be unequal, half a grain of fresh extract of belladonna will probably remove these disadvantages. If the aloin pill gripes, provokes the discharge of much mucus, or otherwise disagrees, substitute the fluid extract of cascara sagrada, and take from 5 to 20 drops in an ounce of water either on retiring to bed or before dinner. And when neither aloin nor cascara agrees, you may succeed by taking before the mid-day meal 2 or 3 grains each of dried carbonate of sodium and powdered rhubarb.

The exact agent employed for the relief of constipation is of much less importance than its mode of operation. If, whatever the agent may be, it succeeds in producing after the manner of nature one moderate-formed stool, it may be, if necessary, continued indefinitely without fear of injurious effects.

HYDRASTINE.

In the root of *Hydrastis canadensis*, besides berbine, a second alkaloid, hydrastine, is known to occur. An investigation of it has yielded interesting results to Messrs. Freund and W. Will (*Berichte*, xix. 2797). Hydrastine was found to be most conveniently obtained by exhausting the finely-powdered root with ether, dissolving the residue left on evaporation in hot alcohol, and filtering; on cooling, the hydrastine crystallizes out almost pure. Analysis of the base and of an iodomethyl compound confirmed the formula $C_{21}H_{21}NO_6$. Upon oxidation by means of potassium permanganate or dilute nitric acid, the base split up, a crystalline acid separating, which proved to be identical with opianic acid. From the filtrate a crystalline base was separated, melting at 115° C., and very soluble in ether, alcohol, and chloroform, which so closely resembled cotarine, the base yielded together with opianic acid by the oxidation of narcotine, that it might have been considered identical had not an analysis shown that its composition was different. This resemblance of hydrastine to narcotine, from which it differs in its empirical formula only in containing one atom of oxygen less, was increased by the fact that the base resulting from its decomposition forms a crystalline hydride corresponding to hydrocotarine. It has been alleged that the root also contains two other alkaloids, to which the name of "xanthopucine" and "canadine" have been given; but the authors failed to detect any other base than berberine and hydrastine. They separated, however, a crystalline neutral substance, apparently a kind of lactone, which, when treated with nitric acid, formed a crystalline nitrogen compound; this is to be the subject of further examination.—*The Pharmaceutical Journal and Transactions*, November 27, 1886.

HYPNOTIC PROPERTIES OF BOLDO-GLUCINE.

Dr. René Juranville, of Paris, has published as a graduation thesis an account of some experiments and observations on boldo-glucine, an aromatic substance of the nature of a glucoside, obtained by M. Chapoteaut from the leaves of the *Pneumus boldus*, or *Boldo fragrans*, a plant belonging to the Mominiaceæ, which has from time immemorial been employed by the natives of Bolivia, Chili, and Peru in hepatic diseases. The boldo-glucine used M. Juranville is not the same substance as boldine, which is an alkaloid existing in very small quantity in the leaves, and which was isolated in 1874 by MM. Cl. Verne and Bourgoin. The observations were directed to the hypnotic action of the glucoside, and were conducted on both animals and human subjects. Dogs were sent to sleep by intravenous injections of boldo-glucine, in quantities of from two to seven grammes. Observations were taken and curves constructed, showing that during the sleep produced the cardiac beats increased in rapidity, while the amplitude of the pulsations diminished; the arterial pressure was not affected. M. Juranville also gathered from his observations that anæmia of the brain was produced. His therapeutic researches were conducted on insane patients, the doses given being from 22.5 grains to 2 drachms, the substance being enclosed in gelatin-capsules or introduced by means of enemata. It was not found easy to administer it in the form of draughts on account of their powerful odor. It gave rise to no disagreeable symptoms, and, indeed, appeared to stimulate the appetite and the digestive functions. The hypnotic effect was very definite, ten patients on whom it was tried being all sent to sleep, and in some cases their hallucinations being removed; the effect was not, however, permanent, the sleeplessness and hallucinations returning on the cessation of the treatment. M. Juranville concludes that though boldo is not a perfect hypnotic, it is likely to prove valuable in cases

of neurotic or maniacal insomnia when other drugs have been tried without effect. Further study of its action is, of course, required before any very decided opinion as to its efficacy can be expressed.—*The Lancet*, October 16, 1886.

THE ACTION OF THE COMMON ALKALINE METALS AND EARTHS.

Potassium, sodium, lithium, calcium, and magnesium form the three following pharmacological groups, according to their action in mammals. The action of these agents has been investigated by CURCI (*Annali di Chemi. e di Farm.*, June, 1886) with the following results: 1. The salts of potassium,—muscular agents, at first stimulant, then paralyzing. 2. The salts of sodium and lithium,—nerve agents, causing convulsions. 3. The salts of calcium and magnesium,—paralyzing nerve agents. However, while they manifest these three principal types of action on the nervous and the muscular systems, they have an almost identical action on the heart and circulation. They all at first cause increase of the blood-pressure, with slowing and strengthening of the pulse, and then lowering of the blood-pressure, with quickening and weakening of the pulse, and finally paralysis of the heart. Dr. Curci finds that when the medulla oblongata, and therefore the vaso-motor centre, is destroyed, potassium, sodium, lithium, and calcium produce increased blood-pressure, with slowing and strengthening of the pulse. Magnesium has no such effect. The first four, therefore, have a peripheral, magnesium a central, action. When the peripheral vaso-motor system is paralyzed by curare, sodium, calcium, and magnesium do not increase the blood-pressure, or but very slightly; while potassium and lithium, as in the normal state, markedly increase the pressure and render the pulse slower and stronger. Sodium, magnesium, and calcium therefore act on the peripheral vaso-motor nerves; while potassium and lithium act on the muscular fibre of the heart and blood-vessels. Potassium in mammals acts more rapidly and energetically on the vessel and heart muscular fibre than on the voluntary striated fibre; but, speaking generally, it acts on all voluntary and involuntary muscles, while it has no direct or manifest action on the nervous system. In the Batrachiæ, on the contrary, potassium acts first on the nervous centres and then on the peripheral nerves; afterwards on the voluntary muscles, and, lastly, on the heart. This is probably due to the low temperature of the blood in batrachians. Curci finds that when frogs and toads are kept in hot water until their temperature equals that of a mammal, potassium acts in the same way as in warm-blooded animals. In this experiment, many times repeated, the heart was arrested before the complete abolition of reflex and voluntary movement. The excitability of the myocardium is exhausted before that of the striated muscles. In batrachians, therefore, at a low temperature the nerve-tissue is more sensitive than the cardiac muscle to the action of potassium; while at a high temperature this is reversed, and the heart becomes more sensitive than the nerves, just as in mammals.—*London Med. Record*, October 15, 1886.

URETHAN AND ITS ANTICONVULSIVE ACTION.

In the *Vratch*, Nos. 31 and 32, 1886, PROFESSOR VASILY VON ANREP, of Kharkov, publishes an important paper embodying the results of his extensive experimental researches on the action of urethan on the nervous system in frogs, rabbits, dogs, and pigeons (*London Medical Record*, December 15, 1886).

General phenomena of urethan-poisoning are almost identical and constant in all the animals named. First symptoms induced by the drug are a more or less intense general excitement, and quickening of the breathing and cardiac action. The period of excitement lasts always a relatively short time, but is the shorter the larger is the dose given. It is followed either by a complete recovery, or by a second period, which is characterized by immobility, failure of reflex action, retardation of breathing, decrease of the temperature, and a more or less deep sleep, the intensity and duration of which symptoms vary according to the dose and individuality of the animal experimented upon. In young dogs the hypnotic action of urethan seems to be stronger than in the older ones. When the dose is very large (fatal), a third and last period of the poisoning takes place; it is marked by a further retardation of respiration, absolute unconsciousness, absence of reflexes, enormous fall of the temperature, and weakened and retarded cardiac action. This period is very prolonged, and invariably leads to death from asphyxia. The fatal dose for a frog is as large as 0.4 gramme; for a rabbit 7 grammes per kilogramme of the animal's weight; for a dog, 5 grammes per kilogramme. Therefore, urethan possesses

but relatively slight toxic properties. Meanwhile, its action on the nervous system is very pronounced even when the drug is administered in comparatively small doses.

Reflex Action.—In frogs, small doses (0.03 to 0.1 gramme) are inactive; moderate doses (0.15 to 0.2 gramme) markedly lower the reflex action; large doses (0.25 to 0.35 gramme) not only decrease the latter but also lower irritability of the peripheral endings of motor nerves. The failure of reflexes always precedes the change in irritability of the nerve-endings, takes place not earlier than about half an hour after the poisoning (that is, only when the hypnotic influence of the drug is in full action), and disappears with the animal's awakening from narcosis. After large doses, a full prostration ensues in half to one and a half hours; it depends solely upon paralysis of the spinal cord. In warm-blooded animals, a short period of increased reflex action is observed, and only subsequently (after large doses) a decrease of the latter follows.

Sleep.—An average hypnotic dose for a dog and rabbit is 0.5 gramme per kilogramme. Easily excitable nervous dogs require considerably larger doses than the phlegmatic. After a 5- to 8-gramme dose, the animal falls asleep within twenty to forty minutes. The duration of sleep varies from several hours to two or three days. After awakening, general weakness, unsteady movements, and loss of appetite are observed. After a 10-gramme dose, the weakness lasts more than for twenty-four hours. Sensibility is more or less lowered for a short while before, during, and for one to ten hours after sleep.

Temperature.—A pronounced antipyretic action of urethan (which was first pointed out by Dr. Coze, and certainly deserves every attention of practitioners) is pretty constant. The fall of the (normal) temperature commences soon after the animal's falling asleep, may reach (according to the dose used) from 1° to 4° C., and last from two to six hours, to rapidly disappear after awakening. Fatal doses give rise to an enormous fall of the temperature (reminding only of cases of curare-poisoning). Thus, in a rabbit of five hundred and thirty grammes in weight, poisoned by 3½ grammes of urethan, the temperature within four hours fell from the original 39.7° to 32.8° C., to descend as low as 26° C. by the end of twenty-four hours (death ensuing on the fourth day).

Psychomotor centres, as examined in dogs, show a considerable and prolonged (several hours) decrease of faradic excitability under the influence of hypnotic doses of urethan. Small doses of the drug produce only a short and slight increase of the irritability.

Anti-convulsive Action.—In view of a pronounced action of urethan on the spinal cord, Professor Anrep undertook a special series of experiments to study its relation to various convulsive poisons, such as strychnine, picrotoxine, nicotine, and resorcin. In frogs, urethan may arrest or prevent convulsions caused by strychnine, but cannot either bring recovery or even delay the animal's death; on the contrary, its large doses accelerate death from strychnine (since both of the drugs kill by inducing paralysis of the central nervous system). It is otherwise in regard to dogs, rabbits, and warm-blooded animals generally, in which death in the case of strychnine-poisoning is very often caused by asphyxia, in consequence of tetanic contractions of the diaphragm and thoracic muscles. When the animal has been poisoned by a moderate dose of strychnine, an early internal administration of a few grammes of urethan pretty surely prevents, or at least considerably soothes, convulsions. A repeated administration of large doses of urethan may save the animal poisoned by a relatively small fatal dose of strychnine. In cases of poisoning by very large doses of the latter drug, urethan only arrests convulsions and postpones death. The same may be stated as regards the relation of urethan to picrotoxine, nicotine, and resorcin. In other words, urethan possesses an anti-convulsive action, and may be usefully administered in cases of intoxication by convulsive poisons, as well as in diseases associated with convulsions. In this regard urethan occupies a higher stand than chloral, since, being as effective as the latter, it is free from any dangerous action on the organs of respiration and circulation. Judging from his experiment on dogs, Professor Anrep thinks that the doses of 8 to 12 grammes for an adult man may be given without fearing any dangerous or unpleasant accessory effects. At all events, in cases of poisoning, any good may be expected only from such large doses, since the smaller ones (3 grammes) would only give rise to a rather intense initial excitement. The most convenient mode of the administration of urethan in large doses is that through the rectum. The ingestion of large doses produces gastric disturbances.

LANTANINE.

Lantanine is an alkaloid discovered by M. Negrete, and extracted from *Verba sagrata* of the family of verbenas. M. BUIZA has observed that, like quinine, this alkaloid had some action on the circulation. It slows the nutrition, and at the same time lowers the temperature. The most delicate stomachs tolerate lantanine. Intermittent fevers that prove refractory to quinine have yielded to the influence of 2 grammes (30 grs.) of lantanine. In order to produce antipyretic effects in febrile conditions the dose employed is from 1 to 2 grammes in twenty-four hours, given in pills of 10 centigrammes (7½ grs.). In intermittent fevers the drug is administered immediately after the paroxysm. Ninety-five times out of a hundred a further paroxysm will not appear. The tincture of lantana cannot be employed owing to its intense bitterness, which cannot be masked by syrup or wine.—*The Lancet*, October 16, 1886.

GUAIACUM AS AN EMMENAGOGUE.

In the *Birmingham Medical Review* for January, 1887, SIR JAMES SAWYER states that he has given guaiacum in a large number of cases, and regards the drug as an active remedy in promoting the menstrual secretion in a large proportion of cases of amenorrhœa. It appears most efficient, when given alone, in those cases in which the cause of the amenorrhœa is obscure ; that is, in those cases in which there is no obvious spanæmic deterioration to which the menstrual deficiency is referable. He gives 10 grains of the powdered resin of guaiacum, stirred in a wineglassful of milk, every morning before breakfast. The remedy may thus be given safely for some weeks. In a few instances it has been found to be necessary to suspend temporarily the administration of the drug, on account of the production of a little abdominal pain and purging.

In some cases of dysmenorrhœa guaiacum has been found to possess considerable curative efficacy. In those cases of dysmenorrhœa in which we can find no vice producing menstrual obstruction of a mechanical nature, and in which there are no inflammatory or plethoric signs, the ammoniate tincture of guaiacum is a reliable remedy when given during the painful period. From half a drachm to a drachm may be given as dose in a wine-glassful of water every two or three hours until the pain is relieved.

PHOSPHATIC DIABETES.

At a recent meeting of the Medical Society of London, as reported in the *Lancet* for January 15, 1887, DR. RALFE introduced to the notice of the Society a patient suffering from phosphatic diabetes, and read particulars of twelve others. These he arranged in groups according to the classification of Professor Teissier, who first gave a systematic account of the affection. Group 1. Excessive elimination of phosphoric acid associated with nervous derangements ; three cases. Group 2. Excessive elimination of phosphoric acid associated with phthisis ; three cases. Group 3. Excessive elimination of phosphoric acid alternating with saccharine diabetes ; three cases. Group 4. Excessive elimination of phosphoric acid running a distinct course, like saccharine diabetes, only without the sugar ; five cases. All the cases, with the exception of two, were young adult males. The symptoms common to all were great emaciation, aching rheumatic pains in loins and pelvic regions, dry, harsh skin, with tendency to boils, and ravenous appetite ; in some cases cataract develops. In the majority there was polyuria ; in others the urine was normal in quantity, with a high specific gravity. The urea was increased in some cases slightly, in others to a greater extent ; but the great feature of all the cases was the very considerable and constant elimination of phosphoric acid, with or without increase of the other constituents of the urine, —a feature which distinguishes it from insipid diabetes on the one hand and azoturia on the other, with both of which it has been improperly confounded. The pathology, Dr. Ralfe thinks, depends not so much on increased metabolism of nervous matter as on defective nutrition, so that the tissues are not able to utilize the phosphorus brought to them, and consequently a greater amount passes through the system daily. In those cases in which an excessive excretion of phosphoric acid replaces saccharine diabetes, it is probable that acids like oxy-butyric-glycocollic, etc., formed by imperfect oxidation of the sugar, dissolve out the earthy phosphates from the tissues, which appear in excess in the urine. As regards the prognosis in these cases, it is most unfavorable in the first two groups ; country air, massage, cod-liver oil, may for a time do good, but the patients rapidly fall back, and either are carried off by some acute attack proving fatal in their exhausted condition, or drift on into phthisis or into diabetes mellitus. The prognosis of the last two groups is much more favorable : of the three cases recorded in

Group 3, two got completely well; the third still suffers from saccharine diabetes, but it remains in a mild form.

MR. W. A. MEREDITH and MR. A. P. GOULD made some remarks.

In reply to Mr. B. Carter, DR. RALFE said that there was only the volumetric method, uranium nitrate being the agent used to precipitate the phosphates. Care must be taken that a specimen of the mixed twenty-four hours' urine is used to estimate the daily discharge of phosphates.

Reviews.

VON ZIEMSSEN'S HANDBOOK OF GENERAL THERAPEUTICS. Vol. V.
New York: William Wood & Co., 1886.

The fifth volume of this encyclopædia masquerading under the name of a handbook is occupied by two elaborate treatises. The first of these is written by Prof. F. Rusch, of Berlin, and translated by Dr. Noble Smith. It considers general orthopædics and massage. Of its two hundred and seventy-five pages over two hundred are occupied with a discussion of the causes, symptoms, and diagnosis and treatment of deformities. Its general characteristics are similar to those of previous articles in the book, thorough, Germanic; it must not only be of value to every general practitioner who essays to treat diseases which are discussed in these pages, but also to the well-read specialist. As instances that its author is more familiar with German habits than with those of the Anglo-Saxon, may be mentioned the statement that the bicycle, or, as it is called in the book, the two-wheeled velocipede, is preferable to the horse, because "its rider does not run the danger of considerable injury from a fall." Certainly the Anglo-Saxon two-wheeler is a more dangerous beast than is its quadruped rival.

The second half of the book before us is occupied by a treatise on "Hydrotherapeutics," by Dr. W. Winternitz. The translator, F. W. Elsner, dates his preface from Melbourne, and, if his work is to be judged as a specimen of antipodal English, we fear that noble Anglo-Saxon is in serious danger of mortal injury at the hands of our distant *confrères*. He says, "In the pious endeavor to render the translation as nearly as possible in the author's own style, the translator fears that he has now and again offended against the laws of idiom slightly, but this he hopes will be excused him, as that can hardly be considered a translation which will be practically a rewritten work, if elaborate syntax is to be the fixed rule without departure."

The spirit of this sentence is a most aggravating one. The translator who sacrifices his native tongue to the barbarities of Teutonic involution deserves death. If he cannot properly translate German into good English, he should go to either a German or an English schoolmaster; or, if unwilling to do this, should altogether abstain from translating. The sentence we have quoted, however, evinces urgent need of English study. The adjective "slightly" ought to be in front of its verb offended; "but this he hopes will be excused him," ought to read, "for this he hopes he will be excused," since as it now stands the passive verb is made to govern the pronoun him like an active transitive verb. Again, the change of tense from the present to the future time in the next to the last clause of the sentence is atrocious. "Can be" should be followed by is, not "will be." On the whole, we commend this sentence to professors in grammar as affording an excellent exercise to their students in pointing out errors of construction. We have no doubt, as stated by Dr. Elsner, that the German of Dr. Winternitz on "Hydrotherapeutics" is extraordinary, but we are inclined to think that the translation is still more marvellous.

William Wood & Co. should have employed some one to have translated, or at least to have edited, the translation. We have wrestled with some of the sentences almost as long as Jacob wrestled with the angel, but with far less success. To drop figures, in a word, the English of this translation is often understood with difficulty. When to this is superadded the prolixity, which probably characterized the original essay, the apparent total absence on the part of the author of any knowledge of work done outside of Germany, and the indefiniteness of many of the statements, it is plain that the essay is not an attractive one. The most valuable part of it to the general reader, according to our thinking, is the account of the different methods of applying cold and hot water generally and locally. For this and for other things to be gleaned from it the treatise is worthy of study, but it still remains for some one of practised literary skill and of scientific and practical knowledge of the subject, to write for the profession a concise, readable account of "Hydrotherapeutics."

THE NATIONAL DISPENSATORY. By Alfred Stillé, M.D., LL.D., and John M. Maisch, Phar.D. Fourth Edition.
Philadelphia: Henry C. Lea's Son & Co., 1886.

The National Dispensatory is too well known by the reading medical and pharmaceutical public to require elaborate review at this date. Its virtues and its faults, its successes and shortcomings, are matters of common repute. On the appearance of a new edition it is simply the province of the reviewer to indicate how far the book has been rewritten and how thoroughly it has been revised. Examination shows that in the present edition the changes have consisted not in a thorough overgoing of the various articles, but are chiefly in revision of the references to the British Pharmacopœia, and in the addition of certain articles to the end of the book as a sort of appendix. This so-called addenda occupies about thirty-five pages, and consists of articles upon Antipyrin, Cocaine Hydrochlorate, Cascara Sagrada, Fabiana, Francisca, Gymnocladus, Hydroquinone, Hypnone, Iodol, Jacaranda, Lanolin, Menthol, Phormium, Sulphophenol, Thallin, and Urethan, and a few other unimportant matters. The fact that these articles are placed at the end of the book and not inserted at their proper position, indicates that the present is a reprint from old plates, which have been so little altered as not to modify their paging. Comparison of the pages of the two editions confirms this suspicion. Of a large number of pages looked at in the fourth edition, each commences with exactly the same syllable as does the corresponding page of the third edition.

Correspondence.

LONDON.

(From our Special Correspondent.)

You know that with an Englishman the first subject of conversation is the weather. You smile at this insular peculiarity of ours, but I trust you do not regard it as altogether unreasonable. If you were in London at this moment you would pity and sympathize with us, for you would understand how it is that the weather is always at the tip of our tongues. Cold, damp, and dirt are an unpleasant combination of miseries to live in. Our hardy Anglo-Saxon race cannot be charged with being afraid of cold, and, for the matter of that, a certain degree of damp, but we do resent dirt, even when it comes in the shape of disinfectant smoke and soot. We are living in a nearly constant fog,—not constant in the degree which you have vividly realized from Dickens or Taine, but a fog that is always here to some depth, and which thickens every few days into the classical pea-soup atmosphere of these authors. Every one knows the strange adventures of the street on these occasions from the graphic pictures drawn by master-hands, but has any writer looked inside the walls to tell of the scenes within? Up the lanes and courts of this vast city, in the few square feet of a room which a whole family calls its home, what of the child ill of measles, the puerperal mother, or the father with emphysema and dilated heart? Fresh air is out of the question. Ventilation is a mockery with the oxygen choked out of the atmosphere by soot and the other foul products of the chimney. Warmth is the first consideration: windows are fastened up and stopped and stuffed. The fire is the only friend, if a fire can be afforded. What wonder if with all this the death-rate of London rise from eighteen to twenty-two in a week? Even in hospitals you may see, these days of fog, patients dying under your very eyes from asphyxia. We have to leech them, to open a vein, and to dose them with ether, alcohol, and carbonate of ammonia, in order to keep the blood moving in the heart and lungs, and the corpuscles fairly charged with oxygen. These are but poor make-shifts,—but feeble attempts to cope with an evil of our own making. Can nothing be done on a larger scale—on a scale worthy of modern applied science—to rid us of this demon, fog? We have had a smoke exhibition, a smoke abatement association, smokeless stoves, smokeless coals; but one after another they seem to have had their day and disappeared, leaving us in still deeper darkness. For myself, I cannot see how matters can do other than grow steadily worse as long as London increases in extent on its present principles of construction. Fog appears to increase with the area of chimneys in an increasing ratio. Some of us would positively try to stay the further growth of the metropolis! This is a hopeless proposal. But could we not insist, if we had anything like an intelligent municipal government, on the adoption of other means of heating and lighting? Why should every room be a smoke-centre? Does any one attempt to deny that before the present century ends we shall have discarded coal in a great measure in the kitchen? May we not

hope that heat will shortly be supplied on a large scale to great blocks of habitations in such a city as this? How much longer shall we tolerate the blazing gas in sitting-rooms and bedrooms, with its foul, noxious, if invisible, products, whilst electricity is ready at hand? I trust this reference to a question which so nearly concerns us on this side may not be considered out of place in an American journal of therapeutics. More than half of the science and art of treatment consists in prophylaxis, and the proportion is ever growing. Let the great country where towns and cities are being daily founded take careful note of our experience.

It is satisfactory to turn from what might and ought to be—but has not been—done in the direction of preserving health and life to what has been accomplished during the year which is just closing in the way of treatment among us. Short though the record of visible progress in therapeutics may be in England, there can be no question about the steady and substantial, if somewhat slow, advance of all the departments of medicine that contribute to sound scientific treatment. It could not well be otherwise. The enthusiasm manifest among us just now is extraordinary; and if I had to deplore in my last letter to you that so few of our younger men appear to have taken to practical therapeutics, I will not deny that they are doing their best to lay a sound foundation of a future science of healing. Unquestionably this activity is part of a wave that has reached us from Germany, whence have come so many of our methods and so much of the exact physiology and pathology on which our own investigations are based. But, apart from these less definite forms of progress, this country may be proud to chronicle at the end of the year the share it has taken in the improvements in the art of healing.

First among these is unquestionably the recent development of the surgery of the brain. During the past year a number of cases of cerebral tumor and other morbid conditions of the intracranial region have been subjected to surgical interference. Hardly a week now passes but one hears of some operation on the brain surpassing its predecessors in magnitude, and, as far as I have learned, performed with success. Hitherto the cerebrum has been the part of the brain attacked; but the other day Mr. Horsley, of University College and the Hospital for Epilepsy, who has performed most of these operations with us, removed a tumor from the cerebellum. It has not been my good fortune to be present at any of these operations of Mr. Horsley's; but I am assured that nothing could be more remarkable than the freedom with which he treats the parts,—freedom, I mean, which comes of knowledge, confidence, and skill. The bone is very freely removed, and when the brain is reached one is startled by the size of the portion that may be taken away, including, of course, the morbid mass. In every instance the urgent symptoms have been relieved,—the continuous series of epileptic fits or the profound coma in which the patient may have been lying for many months. In another aspect these operations on the cerebral substance are of rare interest to us. The exact relations of the excised portions of brain are carefully ascertained, and thus not only is the regional diagnosis, made before the operation, rigidly tested, but an opportunity is afforded of studying, after the operation, the physiological effects of removal of a definite area of the convolutions. Manifestly both these series of results must be interpreted with great caution at present; the effects of inflammatory stimulation and of general intracranial pressure, on the one hand, being liable to be confounded with those of direct irritation or with paralysis from loss of brain-substance on the other hand. By and by, as cases multiply, we shall be able to eliminate these sources of fallacy. One may well envy Dr. Hughlings Jackson and Dr. Ferrier, our true pioneers of cerebral surgery, the satisfaction with which they watch the results of operations in such cases, several of which have been under their own care.

In my letter which you published in August I referred to the incursions that our surgeons had been making into another region which until quite recent times was considered to belong peculiarly to the physician. I mean the lungs. We do not appear to have gone much farther in this particular direction the last few months. No doubt the surgical treatment of diseases of the chest in general, including especially pleurisy and its multiform results, has become more definitely systematized. Here, also, as in the case of the brain, operation is constantly affording us an opportunity of testing our diagnosis, and thus of advancing our knowledge of the nature and signs of diseases of the chest, along with their treatment. I have heard nothing, so far, of the routine treatment of cavernous phthisis by intrapulmonary injections, such as I see reported in some of your American journals.

We are anxious to hear more of this system, which sounds to some of us "too good to be true." Another system of treatment of lung-disease which has just been introduced to our notice by our French colleagues is Bergeon's method of gaseous enemata. No doubt before this letter reaches the light you will have heard of the apparatus or seen it at work. I need hardly tell you that the system is being received here with great caution, not to say criticism. At first sight nothing could look less likely to be successful, or even, if useful, to commend itself in general practice, than the treatment of phthisis by the injection of a large quantity of gas into the bowel! This objection, which I suggest on the score of unpleasantness, is, however, greatly diminished when one finds that the gaseous enemata can easily be self-administered beneath the bedclothes. When we turn to the rationale of the method we find a number of difficulties in connection with it which must be removed before we can accept this as a scientific mode of treatment. When carbonic acid gas is pumped through a bottle of Eaux-Bonnes water it carries with it a load of sulphuretted hydrogen. We are told that if this compound be introduced into the rectum by means of an ordinary enema-pipe, it is absorbed by the bowel, passes by the veins to the lungs, and is there excreted, the sulphur compounds acting as germicides in the pulmonary tissues. We are told that by this method cases of phthisis have been greatly benefited,—indeed cured,—not to speak of bronchitis, bronchiectasis, and spasmodic asthma. You will gather at once that a great deal is assumed in the account given by the authors with respect to the action of sulphuretted hydrogen introduced into the bowel. How do we know that the gas follows the route indicated, once it has entered the blood? Is it not altered in the liver, through which it must pass? One point seems clear,—that there is no odor of sulphides in the air of expiration. May the sulphur not escape by the skin, or by the kidneys, as sulphates? The practical criticism that I hear directed against the method is even more destructive. A few isolated cases of phthisis temporarily improving in a hospital, whilst being treated as special patients under a new system, are valueless as evidence. To draw any definite conclusion from instances of nervous asthma is manifestly out of the question. Still, it would be unfair to prejudge the method, and I am not going entirely by theory. It has been on its trial at the Victoria Park Hospital for Diseases of the Chest for a couple of months, and, although this is much too short a time for judgment to be pronounced for or against a line of treatment, there is nothing encouraging in the reports that reach me.

In the department of medicinal therapeutics the greatest gain of which we have been enabled to avail ourselves has no doubt been in the allied classes of disinfectants, antiseptics, and antipyretics. We frankly confess that we have to thank our German colleagues for most of the novelties of these kinds, although Sir Joseph Lister and his pupils deserve great credit for their advocacy of corrosive sublimate in the treatment of wounds. Antipyrin has won and still holds its ground among us as a powerful antipyretic, but it must be confessed to be far inferior in activity to antifebrine, which is now being fairly tried. The weak point of these drugs is unquestionably the transient character of their febrifuge effects, as compared with quinine and the other old-fashioned methods of securing defervescence. Sparteine, which was so highly vaunted in Paris, seems to have disappointed English expectations. The diuretic effect of calomel—a remedy which has never ceased to be prescribed in dropsies by our older physicians—has been revived with success. These are but a few brief annotations of our recent experience of certain "new" remedies, which are doubtless attracting attention with yourselves.

You will hardly believe me when I tell you in as many words that one of the greatest of our London hospitals is suffering seriously at the hands of our brethren in the States. Yet I am speaking the truth. Free trade with your vast grain-growing country has reduced the value of corn to less than fifty per cent. of what it fetched a few years ago. Foreign meat is sold in Liverpool at threepence or fourpence a pound. This may sound like the millennium for the hungry mouths of our artisans, though the blessing to them is a doubtful one when its full economical effect is carefully weighed, but it is simple ruin to our farmers and land-owners. Now, one of our large land-owners is Guy's Hospital, which is mainly dependent on agricultural prosperity. The income of Guy's has fallen within a short time to as nearly as possible one-half. Guy's is a beggar for the first time in its history, which extends back more than a hundred years, and includes the glorious roll of names like those of Astley Cooper, Hodgkin, Richard Bright, Addison, not to speak of Gull, Pavy, Moxon, Fagge, Wilks, and others who have belonged to our own generation.

Yesterday a public appeal was made for one hundred thousand pounds to put the treasury of Guy's on its feet again, and, from the rate at which the money flowed in, I have little doubt the required sum will soon be raised. This is only an incident in the mendicant history of most of our London hospitals, which are, with a few exceptions, entirely dependent on charity. I trust you have more satisfactory arrangements in the States. There must be a serious waste of money in managing the crowd of institutions for medical and surgical relief which London maintains. Ought we not at once to face the problem, complex and heavy though it may be, of putting all our hospitals under the management of a single public board, and supporting them by public rates?

Before these lines have reached you we shall have entered on the jubilee year of our gracious sovereign lady, Queen Victoria, a name as dear with you as it is to us. English Medicine has just cause to celebrate the beneficent rule of the past fifty years, which has enabled it to grow from what was little more than a refined empiricism to the well-founded science which it is to-day. In this respect Medicine is but one of the many sciences that have flourished during the Victoria period. As a profession we owe to our queen far more than the general prosperity that comes of national advancement, of peace, and of social purity. It is our pride that Queen Victoria takes a special interest in us. Besides the many acts of personal favor which she has shown to those who have been near her and her family in their hours of illness, she has repeatedly given public evidence of her interest in our institutions for the study and application of medical science. Last summer she emerged from her comparative seclusion to lay the foundation-stone of the new building on the Thames Embankment, which ratifies the union for examination purposes of the Royal Colleges of Physicians and Surgeons. It is sincerely to be hoped that by the end of the jubilee year something like order will have replaced the confusion which overspreads all our regulations and arrangements for medical education and graduation in England at the present time. I also hope that a place will be found for Medicine in the great Imperial Institute which has been planned to commemorate the closeness of the federal tie that now binds our colonies and dependencies to the mother-country and their veneration for our common sovereign.

STIGMATA MAIDIS IN GONORRHŒA.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I think if E. Stuver, M.Sc., M.D., of Rawlins, Wyoming Territory, will look on page 280 of the *Medical Record* for September 6, 1884, he will find an article on Stigmata Maidis, recommending its use in gonorrhœa. I have used the fluid extract a number of times since reading the above-mentioned article, but have been disappointed at the result. It will act very well as a diuretic in cases requiring such an agent, but I don't think it has any more beneficial influence over the course of gonorrhœa than other agents of the same class.

Respectfully,

J. W. TRISLER, M.D.

URBANA, ILLINOIS, December 20, 1886.

Notes and Queries.

A CASE OF BELLADONNA-POISONING.

We have received the following communication from a physician who, for evident reasons, desires to remain nameless.

"In July, 1882, I was to attend Mrs. J. E., æt. 30, American, and mother of six or seven children. Had given birth to twins at a previous labor. Mother and family were healthy. They were very poor, living from hand to mouth, and she had had her children at very short intervals. I found her in labor, and diagnosticated twins. In due time one child was born, large and well nourished. After waiting half an hour, and there being no indications of pains, contrary to my custom I thought I would administer ergot. My pocket-case was on a table near by, and as my hands were soiled, I asked an attendant to take a bottle out of my case, indicating the one. My attention was then called to the woman in labor (I had in the mean time been using friction of the fundus to induce contraction), and I then told the attendant to turn out half a teaspoonful. She used a tin spoon nearly twice as large as an ordinary teaspoon, and administered the dose. After waiting about twenty to thirty minutes, I told the attendant to give a teaspoonful dose, as there was no evidence of returning pains. About that time Mrs. E. complained of dryness of the throat, but I took no notice of it, as it is not an uncommon symptom. I did note that her pulse was more frequent, and she said that she could not see well, so in order to hurry things up I gave her a little more,—about a quarter of a

teaspoonful; in fact, about all that I had. The patient wanted to be moved, and I took her under the armpits and drew her up in bed. She remarked that something had come away, and sure enough on examination I found the child's head born, but could not detect any evidence of uterine contraction. The mother now became quite delirious and talked incoherently and could not see the light. For the first time it dawned on me that there had been a mistake, and on looking at my medicine-case I discovered that the ergot bottle was in it and full, and the bottle containing fluid extract of belladonna was empty and on the table. My feelings can be better imagined than described. I immediately administered half a teaspoonful of the sulphate of zinc, and prepared a good half-grain of morph. sulph. By the time I had given the morphine (hypodermically) she had vomited with the aid of a finger in the fauces. In the mean time I had tied the cord and disposed of the child. Symptoms were becoming more alarming every moment; pulse very rapid, and a marked redness began to show very plainly. This deepened until she looked like a lobster.

"I soon again repeated the dose of morphine. It seemed certain that I was to have a corpse on my hands, and I determined to push the morphine until I got some physiological evidence of its effect, so that within an hour I should think I gave a grain and a half. Patient was nearly unconscious, and no response could be got from her. Pupils were dilated to the utmost.

"I was anxious to get away, and told the husband that I would drive home and would be back directly. I said something about 'puerperal mania,' brought about by bearing children too fast, and that I did not think it possible his wife could recover.

"I went home in a bad state of mind, believing that I had killed the woman. In about two hours I returned, fully expecting to find a corpse. But no, the respirations were a little slower; pupils about the same. Gave another dose of morphine, and waited about an hour for effects, and fancied that other signs looked more favorable. Respiration was certainly improving, and the iris began to show itself. I gave still another hypodermic of morphine and left her, returning in about two hours. Her condition was then much improved; the iris was about half visible, and respiration quite natural. Again I repeated the morphine, and after waiting some time left her some morphine powders, to be taken every four hours. I felt encouraged, but dreaded that some sequel might occur that would carry the woman off, but I felt confident that I had been on the right track so far as the antidote was concerned.

"The woman made a good recovery, and was subsequently killed by the cars.

"I have much regretted that I did not keep a more accurate record of symptoms, but really regarded the case as hopeless from the time my mistake was discovered. I am sure that she took at least f℥iiiss fluid extract of belladonna, and that from the time of taking the first dose up to the emesis was about an hour and a half. Probably she vomited a little of the last dose (one-quarter of a teaspoonful), but the emesis was not thorough.

"I am also sure that I gave her not less than *three grains of morphine* in about *six hours*, hypodermically, and the larger part of this was given during the first two hours.

"Two facts I am sure that I have impressed on my mind. One is that belladonna relaxes all of the structures opposing the expulsion of the fœtus, and another is that morphine is an antidote to belladonna in large doses. I have also learned in my experience with morphine narcosis that atropin is very efficient, and indeed I depend mainly on it in such cases.

"D. G. P."

TREATMENT OF WHOOPING-COUGH.

Concerning Dr. Kohlmetz's treatment of whooping-cough, I would add that I have given quinine for several years with the most beneficial results, but with this difference in the manner of administration, viz., that I have used it with finely-powdered white sugar placed dry on the tongue every two or three hours. Under this treatment all my cases have invariably improved rapidly, and, when followed up properly, were cured in a short time.

GEO. A. HETHERINGTON, M.D.

SAINT JOHN, N. B., December 31, 1886.

THE INEQUALITY OF THE PUPILS IN VARIOUS DISEASES.

DR. PASTERNATSKI, who has been working in Professor Chudnovski's clinic in St. Petersburg, has published in the *Vratsch* an account of a number of observations he has been making on the inequality of the pupils in various diseases, thus carrying out a suggestion made by his chief in a work on the methods of examining medical patients, pub-

lished in 1883, in which he expressed an opinion that careful examination of the pupils would lead to interesting results. Dr. Pasternatski examined a number of methods which have been proposed, but did not find any of them suitable for his purpose, and ultimately a much simpler plan, suggested by M. Follin, was adopted. This consists in bringing a catheter gauge-card close to the eye, and comparing the size of the pupil with the apertures in the card. By this means the size of the pupil in millimetres can be ascertained with a degree of accuracy sufficient for the purpose. It is important to make the observations in the shade, for the difference, when there is any, between the diameters of the pupils increases as the light is diminished. The best method of conducting the examination is to close the eye which is not being observed, for this causes a slight increase in the diameter of the pupil of the latter, as was indeed remarked by Hippocrates. It was found, for example, in a case in which this was tested, that when both eyes (being in the shade) were fixed on an object at a distance, the diameter of the right pupil was 5⅓ mm., and that of the left 6 mm.; when, however, the eye not under examination was covered up, the diameters increased to 6 mm. and 6⅔ mm. respectively. As to the diseases in which inequality of pupils has been observed, Dr. Pasternatski quotes a number of cases mentioned by continental physicians; also one of aneurism shown by Professor Gairdner to the Edinburgh Medical Society; as well as two reported by Professor Finlayson in the *Lancet* of January 3, 1885, in both of which aneurisms were found at the necropsy. His own observations gave the percentage of cases in which inequality was found in various diseases as follows: Croupous pneumonia, 85; heart-diseases and aortic aneurisms, 61; pleurisy, 52; chronic catarrhal pneumonia, 38; acute articular rheumatism, 25; catarrh of the respiratory passages, 25; scurvy, 16; typhus, 16; recurrent typhus (relapsing fever), 15; abdominal typhus (enteric fever), 13. Inequality of pupils was also found in half the cases of catarrhal and hepatic jaundice and renal colic. The largest percentage occurred in croupous pneumonia, and study of the cases showed that the position and stage of development of the disease has a remarkable effect upon the pupils. At the very commencement the pupil on the same side as the affected lung is, as a rule, larger than the other. The difference generally increases with the lung inflammation, reaching its height on the third, fourth, or fifth day; before the crisis the difference decreases, sometimes even disappearing. Afterwards, during the stage of resolution, a difference is again manifest, the pupil on the affected side being now contracted. Not only do the pupils in pneumonia differ in size, but also in sensibility to light. Speaking generally, the author's observations lead him to believe that inequality of pupils is most frequently met with in those internal diseases which not only affect the system generally, but which, like pneumonia, pleurisy, and hepatic and renal colic, are definitely localized as well. It is also very usual in heart-diseases and aneurism, but comparatively rare in scurvy and infectious diseases, such as typhus, and when it does occur in these it is generally consequent on some complication.—*Lancet*, January 15, 1887.

TEST-PAPERS FOR RECOGNIZING ALBUMEN.

These are two papers, one of which has been soaked in concentrated solution of citric acid, the other in solutio hydrarg. potassica, which is potass. iod., 3.32 parts; sublimate, 1.35 parts; acetic acid, 20 parts; aquæ destill., 40 parts.

The paper is dried and cut in slips.

Both papers are dipped into the suspected urine, which is shaken, the paper forming a thread in the test-tube. If albumen is present, cloudiness or a precipitate forms.

This test is very delicate, reacting with .001 per cent. of albumen.

It precipitates also uric acid, mucin, and alkaloids. Uric acid dissolves on the application of heat; alkaloids are dissolved by alcohol.—*Wiener Zeitschrift für Apotheker Vereins*, December 10, 1886.

GUACHACATA.

M. Crescencio Garcia proposes to substitute for quassia, gentian, quinine, etc., the flowers of a Mexican plant commonly called guachacata, and promises further information about the botany of the plant. Garcia prepares a bitter elixir by extracting first with alcohol and then with water and mixing the products; this is done because the plant contains two chief bitter principles, one soluble in alcohol, the other in water. The formula runs thus: guachacata flowers, 30 grammes; rectified spirits of wine, 300 grammes; sweet orange peel, 15 grammes. Macerate for a

week or a fortnight in sunlight; express; treat the residue with a little boiling water; express; mix the liquids.—*London Medical Record*, December 15, 1886.

PASTEUR'S INOCULATIONS IN RUSSIA.

PETERMANN, of Moscow, has established an inoculation station at Moscow in connection with the military hospital, and reports the following results: in three months 115 patients have been treated, of whom 87 were bitten by rabid dogs, 18 by rabid wolves, 5 by rabid horses, 4 by rabid cats, 1 by a rabid hog. As regards the portion of the body most exposed, 11 were bitten in the face, the remainder on the limbs and trunk. 55 were bitten in August, 31 in September, when apparently rabies is most common. The preparations of spinal cords used in inoculation varied from those which had been in course of development thirteen days to those which had been two days in preparing. Two of the 115 patients died, one who was inoculated fourteen days after the bite was received from a dog, and one who was bitten by a wolf, and inoculated eight days afterwards. The same method of treatment at Odessa was applied to 103 persons. In 36 cases the dog was probably rabid when the bite was inflicted; the others were doubtful on this point. The mortality was 7, greater than in Paris, but the virus used was weaker. Thirty to sixty-two days was the period of incubation in the fatal cases. The Society of Russian Physicians at St. Petersburg has given the matter much warm discussion, and an earnest effort is being made to test the accuracy of all reports and the genuineness of the rabies to which the patients are thought to have been exposed.—*Deutsche Medizinal Zeitung*, No. 96.

AN ANTIDOTE FOR ARSENIC AND ACONITE.

In a recent number of the *Indian Statesman* there appears a communication from SYED WALAYET ALI XHAN, of Patna, Benga, on a specific antidote for poisoning by arsenic and aconite. It is described as being the bark of the common goolar-tree, generally known to Europeans as the Indian fig. It is administered in doses of from 10 to 12 drachms, ground fine, and mixed with water. In severe cases it may be necessary to repeat it at short intervals three or four times, but it is said never to fail. It has been found successful, according to the author of this statement, in every case in which it has been tried. We have consulted Dymock's "Vegetable Materia Medica of Western India," Waring's "Bibliotheca Therapeutica," and other works, but can find no reference to its use for this purpose. It seems strange that it should be an antidote both for arsenic and aconite, as these drugs do not produce the same symptoms, and are not allied physiologically. The matter requires further investigation, and we must admit that we are at present sceptical as to its value.—*Lancet*, January 15, 1887.

A VALUABLE METRIC TABLE.

The Popular Science News, in its recent issue, gives a table, unlike others of the kind, in giving the equivalents of both the common and metric system together, and is worth preserving for reference, as follows:

Length.

Unit of measurement.	Approximate equivalent.	Accurate equivalent.
1 inch	2½ cubic centimetres	2.539
1 centimetre (1/100 metre)	0.4 inch	0.393
1 yard	1 metre	0.914
1 metre (39 37 inches)	1 yard	1.093
1 foot	30 centimetres	30.479
1 kilometre (1000 metres)	⅝ mile	0.621
1 mile	1⅝ kilometres	1.609

Weight.

1 gramme	15½ grains	15.432
1 grain	0.064 gramme	0.064
1 kilogramme (1000 grammes)	2½ pounds, avoirdupois	2.204
1 pound, avoirdupois	½ kilogramme	0.453
1 ounce, avoirdupois (437½ grains)	28⅓ grammes	28.349
1 ounce, troy or apothecary (480 grains)	31 grammes	31.103

Bulk.

1 cubic centimetre	0.06 cubic inch	0.061
1 cubic inch	16½ cubic centimetres	16.386
1 litre (1000 cubic centimetres)	1 U. S. standard quart	0.946
1 United States quart	1 litre	1.057
1 fluidounce	29½ cubic centimetres	29.570

Surface.

1 hectare (10,000 square metres)	2½ acres	2.471
1 acre	⅔ hectare	0.404

The calculation necessary to convert one system of measurements into the other is very simple. For example, suppose we are directed to use 175 grammes of chlorate of potassium, for making oxygen, how much is it in ounces? We see by the table that one ounce equals 31 grammes; divide 175 by this, and we have 5.6, the required number of ounces. If we wish to measure 53 cubic centimetres of any liquid, 53 ÷ 29.5, the number of cubic centimetres in one fluidounce = 1.8 fluidounces, the required amount. Conversely, suppose we have a quantity of some chemical weighing three-quarters of a

pound, and wish to find the metric equivalent. As one pound is equal to .453 kilogramme, three-quarters of a pound will be equal to three-quarters of that weight, or .33975 of a kilogramme; or, as one kilogramme equals 1000 grammes, three-quarters of a pound will equal 339.75 grammes.

The approximate figures in the second column are sufficiently accurate for ordinary work, while those in the third column are correct to the third decimal place. The table was purposely made simple, and only those weights and only those measures are given which are in constant use. In this connection may be added a set of rules, which, if committed to memory, would render the conversion of one system of weights into the other very simple indeed.

1. To convert troy grains into centigrammes, multiply by 6.

2. To convert centigrammes into troy grains, divide by 6.

3. To convert troy grains into milligrammes, multiply by 60.

4. To convert milligrammes into troy grains, divide by 60.

5. To convert troy grains into grammes, or minims into fluidgrammes, divide by 15.

6. To convert grammes into grains, or fluidgrammes into minims, multiply by 15.

7. To convert drachms into grammes, or fluidrachms into fluidgrammes, multiply by 4.

8. To convert grammes into drachms, or fluidgrammes into fluidrachms, divide by 4.

Gr. i.....	.06 gramme.
ʒi.....	4.00 grammes.
℥i.....	30.00 grammes.

SUBLIMATE-GLYCERIN-GELATIN.

The *Zeitschrift für Apotheker Vereins* speaks of the success which has often occurred in veterinary practice with this combination, and describes its preparation as follows:

Common gelatin is treated with one per cent. sublimate solution twelve hours; the gelatin is then melted, and ten per cent. of glycerin added.

TOXIC EFFECTS OF ONE-ONE-HUNDREDTH OF A GRAIN OF SULPHATE OF DUBOISINE.

At a recent meeting of the Leeds and West Riding Medico-Chirurgical Society DR. CHADWICK related a case where this amount of the drug, instilled for examination of a senile cataract, produced a state of delirium lasting many hours, leaving the patient totally unconscious of what had occurred. There was great muscular weakness, and many strange actions were performed. It was suggested that the susceptibility to this drug reached its maximum in old age, and that the similarity between the symptoms and those of senile atrophy, popularly known as "softening of the brain," might suggest that its action was by causing spasm of the cerebral arterioles, and might indicate a possible liability to that form of pathological change. Dr. Major said the symptoms closely resembled those he had noticed in a medical friend, who took for experimental purposes a large dose of hyoscyamine, being characterized by strange antics, with curious unreasonableness. He attributed much of the effect to delusions of vision.—*The Lancet*, January 8, 1887.

WOOD-FIBRE AS A DRESSING.

DR. PORT, of the German army, recommends in the *Deutschen Militär-Artzlichen Zeitschrift* wood-fibres as an excellent base for dressings. This material is not only of an absorbing nature and free from germs, but possesses also greater elasticity than the cotton-fibres, and does not roll up when used. The elder-tree is most suitable for the purpose. The wood-fibres, before being used, are to be immersed into a solution of corrosive sublimate, expressed, wrapped up in mull, and then applied.

PILOCARPINE IN DATURA STRAMONIUM POISONING.

According to the Paris correspondent of the *British Medical Journal* (January 15, 1887), DR. ROTH (Nagy Bajour, Hungary) was summoned to a little girl aged 4, whom he found quite unconscious. The pupils were dilated, the face and the rest of the body were swollen as in dropsy, and covered with a rash resembling that of scarlatina. The little patient was uneasy and restless, and ground her teeth. Pulse 146, slight and weak; respirations 40; temperature 39° Cent. (102.2° Fahr.). Her bowels had not been opened, nor had she passed urine since the commencement of the attack. A local medical man had prescribed 15 centigrammes of antimony; but her father, who was a chemist, being persuaded that this would do no good, gave her a solution of sulphate of copper. She vom-

ited a large quantity of the fruit of the datura stramonium. Dr. Roth, remembering how Professor Purjeck had cured a case of atropine-poisoning by means of subcutaneous injections of pilocarpine, administered half a centigramme of that drug in twelve hours. This produced neither salivation nor perspiration, and there was no improvement. After a centigramme had been injected, however, the rash and the swelling began to subside. A quarter of an hour later another centigramme was injected, and the child's condition improved still more. The injections were continued, and at six o'clock the pupils had become almost normal. Pulse 120; temperature 39.7° Cent. (102.9° Fahr.). The patient spoke with ease, and said she felt hungry. An hour later, as there was still no perspiration, another half-centigramme was injected. Salivation and perspiration ensued, and rapid recovery followed. Altogether, five grammes and a half were administered. Dr. Roth considers that this dose was necessary to neutralize the poison.

NATHTHOL IN EXCESSIVE SWEATING OF EXTREMITIES AND THE AXILLA.

The *Journal de Médecine et de Chirurgie* recommends against excessive sweating of extremities or of the axillary region the following lotion:

Naphthol, 5 parts;
Glycerin, 10 parts;
Starch, 100 parts.

After having applied this lotion, the parts are to be dusted with the following powder:

Powdered naphthol, 2 parts;
Powdered starch, 100 parts.

In excessive sweating of the feet little cotton-balls saturated with the powder may be inserted between the toes.

AMMONIA APPLICATIONS IN MALIGNANT PUSTULE.

Dr. Leonidas Avendaño, of Peru, who has previously written (*vide The Lancet*, January 9, 1886) in favor of the local treatment of anthrax by ammonia, now publishes in a Lima medical journal an account of a recent case of undoubted malignant pustule in which he successfully adopted this treatment. The patient was a married woman, aged 34, who, two days after being stung by some insect in the forearm, began to experience the symptoms of acute inflammation in the spot. Thinking an ordinary boil was forming, she applied poultices. The next day, when seen by the writer, the pulse was 105, there was a great deal of œdema and redness about the arm, and there was a papule, which was blackish at the centre and surmounted with a circle of vesicles. The etiology, the rapid development, and the local symptoms all pointed to the malignant nature of the case. A crucial incision was made, and a brush saturated with the ordinary solution of ammonia applied to the cut surfaces. An acetate of ammonia and aconite mixture was ordered, and in a few days the patient was well. Dr. Avendaño thinks that other caustics which have been employed in anthrax—as nitric acid, chloride of antimony, and Vienna paste—only partially and incompletely destroy the bacillus anthracis, but that ammonia has a much more powerful effect. This makes the fifth case in which he has seen remarkably successful results follow its employment.—*The Lancet*, October 2, 1886.

BROMIDE OF ETHYL IN CONJUNCTION WITH CHLOROFORM.

At the meeting of the Baltimore Academy of Medicine held November 2, 1886, Dr. J. J. Chisholm stated that he has now employed the bromide of ethyl, in conjunction with chloroform, as an anæsthetic. His method is to anæsthetize the patient first with bromide of ethyl, and then to keep up the anæsthesia with chloroform. The advantage claimed by him for this method is that he accomplishes the desired result much more quickly than when chloroform is used alone.

TANGENA VENENIFERA.

Tangena venenifera, the ordeal-bean of Madagascar, has been made the subject of physiological experiment by Quinquaud. He finds that applied to frogs, the drug suspends voluntary motions, heightens the reflex excitability, and causes clonic and tonic convulsions. Later, symptoms of paralysis set in, though the excitability of the muscular apparatus and of the peripheral motor nerves remains intact at first, but ultimately the system appears as if affected by a curare poison. In dogs, vomiting, diarrhœa, and tenesmus precede the convulsions. The muscular power, however, remains normal until death ensues. Tangena fruit quickens the respiration, then slows it. The frequency of the pulse is increased for a

brief period, and then diminished; the blood-pressure is at first raised and then depressed, so that apparently the circulation and respiration are simultaneously affected, the action of the heart outlasting that of respiration. Quinquaud has given an extract of the seed in doses of 1 to 1½ grains in various diseases, and has come to the conclusion that it can be used in paralytic affections of a toxic nature, atony of the intestines, and in tremor. In some cases of urinary incontinence, distinct improvement followed the use of the drug. The indications for suspension of the treatment are the presence of headache, vomiting, or a sensation of weakness.—*Provincial Medical Journal*, November 1, 1886.

A LIQUID VESICANT.

BIDET recommends the following: Cantharides is treated with choloroform in a distillation apparatus, so that the quantity of chloroform shall remain by redistillation a litre in the following mixture:

Cantharides, 1000 parts;
Chloroform, q. s.;
Wax, 125 parts.

—*Pharmaceutische Post*, October 30, 1886.

COLOMBINE.

M ROUX has observed the effect of pure colombine on fowls, the only animals which he has been able to get to take the medicine by way of the mouth. The symptoms produced by the ingestion of the poison were those that are associated with fatty degeneration of the liver and destruction of its working elements. Colombine irritates the intestinal tube, causing increased secretion from the gastric, intestinal, and biliary surfaces. The occurrence of these serious symptoms makes it necessary that the administration of the drug to human beings should always be in the form of small doses. The daily dose to commence with should not exceed one centigramme ($\frac{1}{100}$ gr.) of the alkaloid, and the powders of columba are to be preferred to the less certain alcoholic and ethereal liquid extracts.—*The Lancet*, October 2, 1886.

ANOTHER CORN CURE.

℞ Empl. adhæsivi, 1000 parts;
Ærugin. pulv., 80 parts;
Acidi carbol. par., 20 parts. M.
L. art.

—*Süddeutsche Apothek. Z.*

MOBILITY OF THE HEART.

DR. M. M. SHERSHEVSKI publishes in the *Vrach* a paper on the mobility or displaceability of the heart. The fact that the heart's position is liable to slight changes, according to the position of the body, has been recognized by Bamberger, Gerhardt, Luschka, and other observers, but they have none of them formulated the conditions under which it takes place. Dr. Shershevski gives details of the examination of forty persons, all of them free from cardiac and pulmonary affections, in whom he noted accurately the position of the heart's boundaries in the upright dorsal, left lateral, and right lateral positions. The chief mobility was towards the left side, but the heart was often quite perceptibly displaced to the right, as well as downwards and even backwards. The chief conditions under which this occurred were youth, nervous states, and freedom of the vessels from signs of sclerosis. Displacement backwards was found in nearly half the cases, and this shows that the heart ought to be examined in the upright posture. The writer specially remarks on this when the examination is made as a prelude to the administration of chloroform, whereas, as a rule, the stethoscope is applied when the patient is lying down and in a very agitated frame of mind, which latter condition always renders the organ more easily displaced; and the diminished diameter due to this may lead to erroneous conclusions if the measurements be not previously taken in an upright position. This has reference chiefly to young persons. In the case of subjects over sixty years of age, and of much younger persons whose arterial system had already begun to show signs of degeneration, there was little or no displacement produced in any position.—*The Lancet*, November 20, 1886.

CREASOTE IN CHOLERA MORBUS.

Spir. chloroform,
Tinct. opii,
Sp. camphoræ, aā ʒiss;
Creasot., gtt. iii;
Olei cinnam., gtt. vii;
Sp. vini gallici, fʒii. M.

S.—10 to 20 drops every five minutes.

—*Med. Record.*

In our last issue the residence of Dr. H. J. Boldt should have been given as 243 West Forty-second Street, New York, instead of 411 Sixth Street.